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IN THE UNITED STATES DISTRICT COURT
 CENTRAL DISTRICT OF CALIFORNIA
 WESTERN DIVISION

18 UNITED STATES OF AMERICA,
 19 Plaintiff,

20 v.

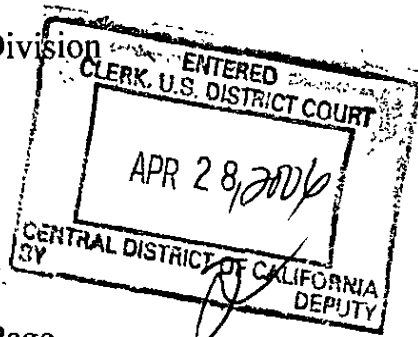
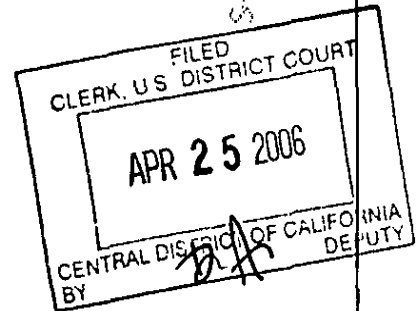
21 CARRIER CORPORATION,
 22 Defendant.
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Case No. CV-05-6022 ABC (FMOx)

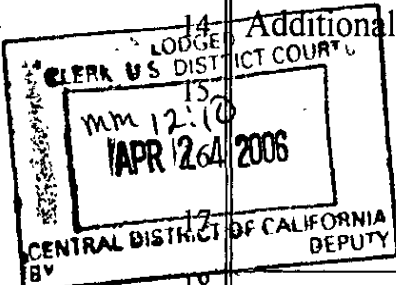
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1 I. BACKGROUND

2 A. The United States of America ("United States"), on behalf of the
3 Administrator of the United States Environmental Protection Agency ("EPA"),
4 filed a complaint in this matter pursuant to Sections 106 and 107 of the
5 Comprehensive Environmental Response, Compensation, and Liability Act
6 ("CERCLA"), 42 U.S.C. §§ 9606, 9607.

7 B. The United States in its complaint seeks, inter alia: (1) reimbursement
8 of costs incurred by EPA and the Department of Justice for response actions at the
9 Puente Valley Operable Unit of the San Gabriel Valley Superfund Site, Area 4,
10 Los Angeles County, California (the "Site") together with accrued interest; (2)
11 performance of response work by the defendant at the Site consistent with the
12 National Contingency Plan, 40 C.F.R. Part 300 (as amended) ("NCP");
13 (3) penalties for each day in which Carrier Corporation, without sufficient cause,
14 willfully violated, or failed or refused to comply with, EPA's Unilateral
15 Administrative Order ("UAO") relating to the Site; and (4) punitive damages for
16 Carrier Corporation's failure, without sufficient cause, to properly provide removal
17 or remedial action pursuant to the UAO, resulting in the incurrence of response
18 costs by the United States.

19 C. In accordance with Section 122(j)(1) of CERCLA, 42 U.S.C.
20 § 9622(j)(1), on September 28, 2000 EPA notified the federal and state natural
21 resource trustees (National Oceanic & Atmospheric Administration - U.S.
22 Department of Interior, and California Department of Fish and Game, respectively)
23 of negotiations with potentially responsible parties regarding the release of
24 hazardous substances that may have resulted in injury to the natural resources
25 under Federal and State trusteeship and encouraged the trustees to participate in the
26 negotiations.

27 D. Settling Defendants do not admit any liability to the Plaintiff arising
28 out of the transactions or occurrences alleged in the complaint, nor do they

1 acknowledge that a release or threatened release of hazardous substances at or from
2 the Site constitutes an imminent or substantial endangerment to the public health or
3 welfare or the environment.

4 E. Pursuant to Section 105 of CERCLA, 42 U.S.C. § 9605, EPA placed
5 the Site on the National Priorities List, set forth at 40 C.F.R. Part 300, Appendix B,
6 by publication in the Federal Register on October 15, 1984, 49 Fed. Reg. 19480.

7 F. In response to a release or a substantial threat of a release of
8 hazardous substances at or from the Site, a group of potentially responsible parties
9 commenced in September 1993, a Remedial Investigation and Feasibility Study
10 ("RI/FS") for the Site pursuant to 40 C.F.R. § 300.430. EPA took over the
11 Feasibility Study in December 1996.

12 G. The group completed the Remedial Investigation Report in May 1997
13 and EPA completed the Feasibility Study Report in May 1997.

14 H. Pursuant to Section 117 of CERCLA, 42 U.S.C. § 9617, EPA
15 published notice of the completion of the FS and of the proposed plan for remedial
16 action on January 28, 1998, in a major local newspaper of general circulation.
17 EPA provided an opportunity for written and oral comments from the public on the
18 proposed plan for remedial action. A copy of the transcript of the public meeting is
19 available to the public as part of the administrative record upon which the Regional
20 Administrator based the selection of the response action.

21 I. The decision by EPA on the remedial action to be implemented at the
22 Site is embodied in a Interim Record of Decision ("Interim ROD"), executed on
23 September 30, 1998, to which the California Department of Toxic Substances
24 Control ("DTSC") has given its concurrence. The Interim ROD includes
25 summaries of EPA's response to public comments. Notice of the final plan was
26 published in accordance with Section 117(b) of CERCLA. On June 14, 2005, EPA
27 issued an Explanation of Significant Differences ("ESD") modifying the Interim
28 ROD. Pursuant to 40 C.F.R. §§ 300.435(c)(2)(i) and 300.825(a)(2), EPA made

1 the ESD available to the public by publishing a notice summarizing the ESD in a
2 major local newspaper of general circulation, by adding the ESD to the
3 Administrative Record, and by making the Administrative Record available to the
4 public at local depositories.

5 J. Based on the information presently available to EPA, EPA believes
6 that the Work will be properly and promptly conducted by the Settling Defendants
7 if conducted in accordance with the requirements of this Consent Decree and its
8 appendices.

9 K. Solely for the purposes of Section 113(j) of CERCLA, the Remedial
10 Action selected by the Interim ROD, as modified by the ESD, and the Work to be
11 performed by the Settling Defendants, shall constitute a response action taken or
12 ordered by the President.

13 L. The Parties recognize, and the Court by entering this Consent Decree
14 finds, that this Consent Decree has been negotiated by the Parties in good faith and
15 implementation of this Consent Decree will facilitate the cleanup of the Site and
16 will avoid prolonged and complicated litigation between the Parties, and that this
17 Consent Decree is fair, reasonable, and in the public interest.

18 NOW, THEREFORE, it is hereby Ordered, Adjudged, and Decreed:

19 II. JURISDICTION

20 1. This Court has jurisdiction over the subject matter of this action
21 pursuant to 28 U.S.C. §§ 1331 and 1345, and 42 U.S.C. §§ 9606, 9607, and
22 9613(b). This Court also has personal jurisdiction over the Settling Defendants.
23 Solely for the purposes of this Consent Decree and the underlying complaint,
24 Settling Defendants waive all objections and defenses that they may have to
25 jurisdiction of the Court or to venue in this District. Settling Defendants shall not
26 challenge the terms of this Consent Decree or this Court's jurisdiction to enter and
27 enforce this Consent Decree.

III. PARTIES BOUND

2. This Consent Decree applies to and is binding upon the United States and upon Settling Defendants and their successors and assigns. Any change in ownership or corporate status of a Settling Defendant including, but not limited to, any transfer of assets or real or personal property, shall in no way alter such Settling Defendant's responsibilities under this Consent Decree.

3. Settling Defendants shall provide a copy of this Consent Decree to each contractor hired to perform the Work (as defined below) required by this Consent Decree and to each person representing any Settling Defendant with respect to the Site or the Work and shall condition all contracts entered into hereunder upon performance of the Work in conformity with the terms of this Consent Decree. Settling Defendants or their contractors shall provide written notice of the Consent Decree to all subcontractors hired to perform any portion of the Work required by this Consent Decree. Settling Defendants shall nonetheless be responsible for ensuring that their contractors and subcontractors perform the Work contemplated herein in accordance with this Consent Decree. With regard to the activities undertaken pursuant to this Consent Decree, each contractor and subcontractor shall be deemed to be in a contractual relationship with the Settling Defendants within the meaning of Section 107(b)(3) of CERCLA, 42 U.S.C. § 9607(b)(3).

IV. DEFINITIONS

4. Unless otherwise expressly provided herein, terms used in this Consent Decree that are defined in CERCLA or in regulations promulgated under CERCLA shall have the meaning assigned to them in CERCLA or in such regulations. Whenever terms listed below are used in this Consent Decree or in the appendices attached hereto and incorporated hereunder, the following definitions shall apply:

"Basin-wide Response Costs" shall mean costs, including but not limited to

1 direct and indirect costs, including accrued Interest, that the United States has
2 incurred or in the future incurs for basin-wide (non-operable unit) response actions
3 in connection with the San Gabriel Valley Superfund Sites, Areas 1 – 4.

4 “CERCLA” shall mean the Comprehensive Environmental Response,
5 Compensation, and Liability Act of 1980, as amended, 42 U.S.C. §§ 9601, et seq.
6 “Consent Decree” shall mean this Decree and all appendices attached hereto (listed
7 in Section XXX). In the event of conflict between this Decree and any appendix,
8 this Decree shall control.

9 “Day” shall mean a calendar day unless expressly stated to be a working
10 day. “Working Day” shall mean a day other than a Saturday, Sunday, or Federal
11 holiday. In computing any period of time under this Consent Decree, where the
12 last day would fall on a Saturday, Sunday, or Federal holiday, the period shall run
13 until the close of business of the next working day.

14 “DOJ” shall mean the United States Department of Justice and any of its
15 successor departments, agencies, or instrumentalities.

16 “DTSC” shall mean the California Department of Toxic Substances Control
17 and any successor departments or agencies.

18 “Effective Date” shall be the effective date of this Consent Decree as
19 provided in Paragraph 117.

20 “Eligible SEP Costs” shall include the costs of implementing the
21 Supplemental Environmental Project (SEP) required pursuant to Section XVIII,
22 but do not include Settling Defendants' overhead, administrative expenses or legal
23 fees. Contractor oversight costs not exceeding 5% of \$468,750 may be included as
24 Eligible SEP Costs, so long as adequate documentation is provided.

25 “EPA” shall mean the United States Environmental Protection Agency and
26 any of its successor departments or agencies.

27 “Explanation of Significant Differences” or “ESD” shall mean the
28 Explanation of Significant differences relating to the Site issued by EPA on June

1 14, 2005. The ESD is attached as Appendix B to this Consent Decree.

2 "Future Response Costs" shall mean all costs that are incurred by the United
3 States or any third party for response actions with respect to the Site after the
4 Effective Date, but prior to the later of (i) the date 8 years from the Operational and
5 Functional Date, or (ii) the date of issuance of a final Record of Decision for the
6 Site. Future Response Costs include, but are not limited to, Basin-wide Response
7 Costs allocated to the Site, direct and indirect costs and accrued interest that the
8 United States incurs in reviewing or developing plans, reports, and other items
9 pursuant to this Consent Decree, verifying the Work, or otherwise implementing,
10 overseeing, or enforcing this Consent Decree, including but not limited to payroll
11 costs, contractor costs, travel costs, laboratory costs, the costs incurred pursuant to
12 Sections VII (Remedy Review), IX (Access and Institutional Controls; including
13 but not limited to the cost of attorney time and any monies paid to secure access or
14 to secure or implement institutional controls including but not limited to the
15 amount of just compensation), XV (Emergency Response), and Paragraph 99 of
16 Section XXII (Work Takeover).

17 "Interest," shall mean interest at the rate specified for interest on investments
18 of the EPA Hazardous Substance Superfund established by 26 U.S.C. § 9507,
19 compounded annually on October 1 of each year, in accordance with 42 U.S.C.
20 § 9607(a). The applicable rate of interest shall be the rate in effect at the time the
21 interest accrues. The rate of interest is subject to change on October 1 of each
22 year.

23 "Interim ROD" shall mean the Interim Record of Decision relating to the
24 Puente Valley Operable Unit of the San Gabriel Valley Superfund Sites signed on
25 September, 30 1998 by the Regional Administrator, EPA Region 9, or his/her
26 delegate, and all attachments thereto. The Interim ROD is attached as Appendix A
27 to this Consent Decree.

28 "Mid-Valley Monitoring" shall mean the installation and monitoring of

1 wells in the intermediate and deep groundwater zones in the mid-valley area of the
2 Site to monitor vertical and horizontal contaminant migration in such groundwater
3 zones, as set forth in the SOW. For purposes of this Consent Decree, the mid-
4 valley shall extend from Azusa Avenue to Puente Creek.

5 "National Contingency Plan" or "NCP" shall mean the National Oil and
6 Hazardous Substances Pollution Contingency Plan promulgated pursuant to
7 Section 105 of CERCLA, 42 U.S.C. § 9605, and codified at 40 C.F.R. Part 300,
8 and any amendments thereto.

9 "Operational and Functional" shall mean that the Remedial Action, or a
10 phase thereof, has been constructed and that it is performing in accordance with the
11 applicable SOW and the applicable final Remedial Design/ Remedial Action Work
12 Plans and other plans approved by EPA.

13 "Operational and Functional Date" shall mean the date that all phases of the
14 Remedial Action are Operational and Functional pursuant to Paragraph 50.

15 "Paragraph" shall mean a portion of this Consent Decree identified by an
16 Arabic numeral or an upper case letter.

17 "Parties" shall mean the United States and the Settling Defendants.

18 "Past Response Costs" shall mean all costs, including but not limited to
19 Basin-wide Response Costs allocated to the Site, direct and indirect costs,
20 including Interest, that the United States or any third party has paid or incurred at
21 or in connection with the Site, through and including the Effective Date.

22 "Performance Criteria" shall mean the prevention of groundwater in the
23 shallow zone north of Puente Creek at the mouth of Puente Valley with
24 contamination greater than or equal to ten-times the levels listed in Table 2 of the
25 ESD from:

- 26 (1) migrating beyond its lateral extent as measured at the time the
27 shallow zone Remedial Action containment system is Operational and
28 Functional; and

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1 (2) migrating vertically into the intermediate zone;
2 for a period of 8 years from the Operational and Functional Date.

3 "Plaintiff" shall mean the United States.

4 "RCRA" shall mean the Solid Waste Disposal Act, as amended, 42 U.S.C.
5 §§ 6901 et seq. (also known as the Resource Conservation and Recovery Act).

6 "Remedial Action" shall mean those activities to be undertaken by Settling
7 Defendants to implement the shallow zone remedy north of Puente Creek and Mid-
8 Valley Monitoring, in accordance with the Interim ROD as modified by the ESD,
9 the applicable SOW, and the applicable Remedial Design/ Remedial Action Work
10 Plans and other plans approved by EPA.

11 "Remedial Action Work Plan" shall mean the document developed pursuant
12 to Paragraph 11 of this Consent Decree and approved by EPA, and any
13 amendments thereto.

14 "Remedial Design" shall mean those activities to be undertaken by Settling
15 Defendants to develop the final plans and specifications for the Remedial Action
16 pursuant to the Remedial Design Work Plan.

17 "Remedial Design Work Plan" shall mean the document developed pursuant
18 to Paragraph 10 of this Consent Decree and approved by EPA, and any
19 amendments thereto.

20 "Section" shall mean a portion of this Consent Decree identified by a Roman
21 numeral.

22 "SEP" shall mean the Woodland Duck Farm Supplemental Environmental
23 Project as described in Paragraph 62, or any alternative Supplemental
24 Environmental Project approved by EPA pursuant to Paragraph 63.

25 "SEP Implementation Plan" shall the mean the document describing the SEP
26 and setting forth those activities required to implement the SEP.

27 "Settling Defendants" shall mean Carrier Corporation and United
28 Technologies Corporation.

1 "Site" shall mean the area of groundwater contamination in Los Angeles
 2 County, California, located in the geographic area designated on the National
 3 Priorities List as the San Gabriel Valley Superfund Site, Area 4 [see 49 Fed. Reg.
 4 19480 (1984)], and identified as the Puente Valley Operable Unit.

5 "State" shall mean the California Department of Toxic Substances Control
 6 ("DTSC").

7 "Statement of Work" or "SOW" shall mean the statement of work for
 8 implementation of the Remedial Design and Remedial Action at the Site, as set
 9 forth in Appendix D to this Consent Decree and any modifications made in
 10 accordance with this Consent Decree.

11 "Supervising Contractor" shall mean the principal contractor retained by the
 12 Settling Defendants to supervise and direct the implementation of the Work under
 13 this Consent Decree.

14 "Unilateral Administrative Order Docket No. 2001-20" or "UAO Docket
 15 No. 2001-20" shall mean the order issued by EPA to Carrier Corporation on or
 16 about September 13, 2001.

17 "United States" shall mean the United States of America.

18 "Waste Material" shall mean (1) any "hazardous substance" under Section
 19 101(14) of CERCLA, 42 U.S.C. § 9601(14); (2) any pollutant or contaminant
 20 under Section 101(33) of CERCLA, 42 U.S.C. § 9601(33); (3) any "solid waste"
 21 under Section 1004(27) of RCRA, 42 U.S.C. § 6903(27); and (4) any "hazardous
 22 material" under the California Hazardous Waste Control Act Section 25100 et seq.

23 "Work" shall mean all activities Settling Defendants are required to perform
 24 under this Consent Decree, except those required by Section XXVI (Retention of
 25 Records) and Section XVIII (Supplemental Environmental Projects).

26 V. GENERAL PROVISIONS

27 5. Objectives of the Parties. The objectives of the Parties in entering into
 28 this Consent Decree are to protect public health or welfare or the environment at

1 the Site by the implementation of response actions at the Site by Settling
2 Defendants, to reimburse response costs of the Plaintiff, and to resolve the claims
3 of Plaintiff against Settling Defendants as provided in this Consent Decree.

4 6. Commitments by Settling Defendants.

5 a. Settling Defendants shall finance and perform the Remedial
6 Action in accordance with this Consent Decree, the Interim ROD as modified by
7 the ESD, the SOW, and all work plans and other plans, standards, specifications,
8 and schedules set forth herein or developed by Settling Defendants and approved
9 by EPA pursuant to this Consent Decree. Settling Defendants shall reimburse the
10 United States for its costs as provided in this Consent Decree. Settling Defendants
11 shall also conduct a SEP, reimburse EPA for oversight costs incurred in connection
12 with the SEP, and pay penalties in accordance with this Consent Decree in
13 settlement of claims for failure to comply with UAO Docket No. 2001-20.

14 b. The obligations of Settling Defendants to finance and perform
15 the Work and of Settling Defendants to pay amounts owed the United States under
16 this Consent Decree are joint and several.

17 7. Compliance With Applicable Law. All activities undertaken by
18 Settling Defendants pursuant to this Consent Decree shall be performed in
19 accordance with the requirements of all applicable federal and state laws and
20 regulations. Settling Defendants must also comply with all applicable or relevant
21 and appropriate requirements of all federal and state environmental laws as set
22 forth in the Interim ROD as modified by the ESD, and the SOW. The activities
23 conducted pursuant to this Consent Decree, if approved by EPA, shall be
24 considered to be consistent with the NCP.

25 8. Permits.

26 a. As provided in Section 121(e) of CERCLA and Section
27 300.400(e) of the NCP, no permit shall be required for any portion of the Work
28 conducted entirely on-Site (i.e., within the areal extent of contamination or in very

1 close proximity to the contamination and necessary for implementation of the
 2 Work). Where any portion of the Work that is not on-Site requires a federal or
 3 state permit or approval, Settling Defendants shall submit timely and complete
 4 applications and take all other actions necessary to obtain all such permits or
 5 approvals.

6 b. The Settling Defendants may seek relief under the provisions of
 7 Section XIX (Force Majeure) of this Consent Decree for any delay in the
 8 performance of the Work or in the performance of the SEP described in Section
 9 XVIII resulting from a failure to obtain, or a delay in obtaining, any permit
 10 required for the Work or for performance of the SEP described in Section XVIII.

11 c. This Consent Decree is not, and shall not be construed to be, a
 12 permit issued pursuant to any federal or state statute or regulation.

13 VI. PERFORMANCE OF THE WORK BY SETTLING DEFENDANTS

14 9. Selection of Supervising Contractor.

15 a. All aspects of the Work to be performed by Settling Defendants
 16 pursuant to Sections VI (Performance of the Work by Settling Defendants), VII
 17 (Remedy Review), VIII (Quality Assurance, Sampling and Data Analysis), and XV
 18 (Emergency Response) of this Consent Decree shall be under the direction and
 19 supervision of the Supervising Contractor, the selection of which shall be subject
 20 to disapproval by EPA. Within 10 Days after the lodging of this Consent Decree,
 21 Settling Defendants shall notify EPA in writing of the name, title, and
 22 qualifications of any contractor proposed to be the Supervising Contractor. With
 23 respect to any contractor proposed to be the Supervising Contractor, Settling
 24 Defendants shall demonstrate that the proposed contractor has a quality system that
 25 complies with ANSI/ASQC E4-1994, "Specifications and Guidelines for Quality
 26 Systems for Environmental Data Collection and Environmental Technology
 27 Programs," (American National Standard, January 5, 1995), by submitting a copy
 28 of the proposed contractor's Quality Management Plan (QMP). The QMP should

1 be prepared in accordance with "EPA Requirements for Quality Management Plans
2 (QA/R-2)" (EPA/240/B-01/002, March 2001) or equivalent documentation as
3 determined by EPA. EPA will issue a notice of disapproval or an authorization to
4 proceed. If at any time thereafter, Settling Defendants propose to change a
5 Supervising Contractor, Settling Defendants shall give such notice to EPA and
6 must obtain an authorization to proceed from EPA before the new Supervising
7 Contractor performs, directs, or supervises any Work under this Consent Decree.

8 b. If EPA disapproves a proposed Supervising Contractor, EPA
9 will notify Settling Defendants in writing. Settling Defendants shall submit to
10 EPA a list of contractors, including the qualifications of each contractor, that
11 would be acceptable to them within 30 Days of receipt of EPA's disapproval of the
12 contractor previously proposed. EPA will provide written notice of the names of
13 any contractor(s) that it disapproves and an authorization to proceed with respect to
14 any of the other contractors. Settling Defendants may select any contractor from
15 that list that is not disapproved and shall notify EPA of the name of the contractor
16 selected within 21 Days of EPA's authorization to proceed.

17 c. If EPA fails to provide written notice of its authorization to
18 proceed or disapproval as provided in this Paragraph and this failure prevents
19 Settling Defendants from meeting one or more deadlines in a plan approved by the
20 EPA pursuant to this Consent Decree, Settling Defendants may seek relief under
21 the provisions of Section XIX (Force Majeure) hereof.

22 10. Remedial Design.

23 a. A work plan for the design of the Remedial Action at the Site
24 ("Remedial Design Work Plan" or "RD Work Plan") has been submitted by
25 Settling Defendants and approved by EPA.

26 b. Settling Defendants shall implement the Remedial Design Work
27 Plan in accordance with the schedule therein. The Settling Defendants shall submit
28 to EPA and DTSC all plans, submittals and other deliverables required under the

1 approved Remedial Design Work Plan in accordance with the approved schedule
2 for review and approval pursuant to Section XI (EPA Approval of Plans and Other
3 Submissions).

4 11. Remedial Action.

5 a. Within 60 Days after the approval of the final design submittal,
6 Settling Defendants shall submit to EPA and DTSC a work plan for the
7 performance of the Remedial Action at the Site ("Remedial Action Work Plan").
8 The Remedial Action Work Plan shall provide for construction and implementation
9 of the Remedial Action. Upon its approval by EPA, the Remedial Action Work
10 Plan shall be incorporated into and become enforceable under this Consent Decree.
11 At the same time as they submit the Remedial Action Work Plan, Settling
12 Defendants shall submit to EPA and DTSC a Health and Safety Plan for field
13 activities required by the Remedial Action Work Plan which conforms to the
14 applicable Occupational Safety and Health Administration and EPA requirements
15 including, but not limited to, 29 C.F.R. § 1910.120.

16 b. The Remedial Action Work Plan shall conform to the
17 requirements set forth in the SOW.

18 c. Upon approval of the Remedial Action Work Plan by EPA,
19 after a reasonable opportunity for review and comment by DTSC, Settling
20 Defendants shall implement the activities required under the Remedial Action
21 Work Plan. The Settling Defendants shall submit to EPA and DTSC all plans,
22 submittals, or other deliverables required under the approved Remedial Action
23 Work Plan in accordance with the approved schedule for review and approval
24 pursuant to Section XI (EPA Approval of Plans and Other Submissions). Unless
25 otherwise directed by EPA, Settling Defendants shall not commence physical
26 Remedial Action activities at the Site prior to approval of the Remedial Action
27 Work Plan.

28 12. The Settling Defendants shall continue to implement the Remedial

1 Action for a period of 8 years from the Operational and Functional Date.

2 13. Modification of the SOW or Related Work Plans.

3 a. If EPA determines that modification to the Work specified in
4 the SOW or in work plans developed pursuant to the SOW is necessary to achieve
5 and maintain the Performance Criteria, to avoid exceeding the discharge ARARs,
6 or to implement Mid-Valley Monitoring, as set forth in the Interim ROD, as
7 modified by the ESD, EPA may require that such modification be incorporated in
8 the SOW or such work plans, provided, however, that a modification may only be
9 required pursuant to this Paragraph to the extent that it is consistent with the scope
10 of the shallow zone remedy north of Puente Creek and Mid-Valley Monitoring
11 selected in the Interim ROD, as modified by the ESD.

12 b. For the purposes of this Paragraph 13 only, the "scope of the
13 shallow zone remedy north of Puente Creek and Mid-Valley Monitoring selected
14 in the Interim ROD, as modified by the ESD" is: 1) the achievement of the
15 Performance Criteria; 2) compliance with discharge ARARs; 3) Mid-Valley
16 Monitoring; and 4) all work necessary to bring the containment system to the point
17 of being Operational & Functional.

18 c. If Settling Defendants object to (i) any modification determined
19 by EPA to be necessary pursuant to this Paragraph, (ii) any response actions
20 determined by EPA to be necessary pursuant to the SOW to come back into
21 compliance with the Performance Criteria or discharge ARARs, or (iii) any
22 response actions that are necessary where EPA has determined pursuant to the
23 SOW that it is more likely than not that the Performance Criteria or the treatment
24 plant discharge ARARs will be exceeded if such actions are not undertaken, they
25 may seek dispute resolution pursuant to Section XX (Dispute Resolution),
26 Paragraph 79 (record review). The SOW or related work plans shall be modified
27 in accordance with final resolution of the dispute.

28 d. Settling Defendants shall implement any work required by any

1 modifications incorporated in the SOW or in work plans developed pursuant to the
2 SOW in accordance with this Paragraph.

3 e. Nothing in this Paragraph shall be construed to limit EPA's
4 authority to require performance of further response actions as otherwise provided
5 in this Consent Decree.

6 14. Settling Defendants acknowledge and agree that nothing in this
7 Consent Decree, the SOW, the Remedial Design Work Plan, or Remedial Action
8 Work Plan constitutes a warranty or representation of any kind by Plaintiff that
9 compliance with the work requirements set forth in the SOW and the Work Plans
10 will achieve the Performance Criteria.

11 15. a. Settling Defendants shall, prior to any off-Site shipment of
12 Waste Material to an out-of-state waste management facility, provide written
13 notification to the appropriate state environmental official in the receiving facility's
14 state and to the EPA Project Coordinator of such shipment of Waste Material.
15 However, this notification requirement shall not apply to any off-Site shipments
16 when the total volume of all such shipments will not exceed 10 cubic yards.

17 (1) Settling Defendants shall include in the written
18 notification the following information, where available: (1) the name and location
19 of the facility to which the Waste Material is to be shipped; (2) the type and
20 quantity of the Waste Material to be shipped; (3) the expected schedule for the
21 shipment of the Waste Material; and (4) the method of transportation. Settling
22 Defendants shall notify the state in which the planned receiving facility is located
23 of major changes in the shipment plan, such as a decision to ship the Waste
24 Material to another facility within the same state, or to a facility in another state.

25 (2) The identity of the receiving facility and state will be
26 determined by Settling Defendants following the award of the contract for
27 Remedial Action construction.

28 Settling Defendants shall provide the information required by this

1 Subparagraph as soon as practicable after the award of the contract and before the
2 Waste Material is actually shipped.

3 b. Before shipping any hazardous substances, pollutants, or
4 contaminants to an off-Site receiving facility, Settling Defendants shall obtain
5 EPA's certification that the proposed receiving facility is operating in compliance
6 with the requirements of CERCLA Section 121(d)(3) and 40 C.F.R. § 300.440.
7 Settling Defendants shall only send hazardous substances, pollutants, or
8 contaminants to an off-Site receiving facility that complies with the requirements
9 of the statutory provision and regulations cited in the preceding sentence.

10 VII. REMEDY REVIEW

11 16. Periodic Review. Until such time as EPA issues a Certification of
12 Completion of the Remedial Action pursuant to Paragraph 51, Settling Defendants
13 shall conduct studies and investigations consistent with EPA's June 2001
14 "Comprehensive Five-Year Review Guidance," OSWER No. 9355.7-03B-P, as
15 modified or amended by any subsequent guidance, as determined by EPA to be
16 necessary for EPA to conduct reviews of whether the Remedial Action is
17 protective of human health and the environment at least every five years after
18 commencement of the Remedial Action as required by Section 121(c) of CERCLA
19 and any applicable regulations.

20 17. EPA Selection of Further Response Actions. If EPA determines, at
21 any time, that the Remedial Action is not protective of human health and the
22 environment, EPA may select further response actions for the Site in accordance
23 with the requirements of CERCLA and the NCP.

24 18. Opportunity To Comment. Settling Defendants, and, if required by
25 Sections 113(k)(2) or 117 of CERCLA, the public, will be provided with an
26 opportunity to comment on any further response actions proposed by EPA as a
27 result of the review conducted pursuant to Section 121(c) of CERCLA and to
28 submit written comments for the record during the comment period.

VIII. QUALITY ASSURANCE, SAMPLING, AND DATA ANALYSIS

19. Settling Defendants shall use quality assurance, quality control, and chain of custody procedures for all treatability, design, compliance and monitoring samples in accordance with "EPA Requirements for Quality Assurance Project Plans (QA/R5)" (EPA/240/B-01/003, March 2001) "Guidance for Quality Assurance Project Plans (QA/G-5)" (EPA/600/R-98/018, February 1998), and subsequent amendments to such guidelines upon notification by EPA to Settling Defendants of such amendment. Amended guidelines shall apply only to procedures conducted after such notification. Prior to the commencement of any monitoring project under this Consent Decree, Settling Defendants shall submit to EPA for approval a Quality Assurance Project Plan ("QAPP") that is consistent with the SOW, the NCP and applicable guidance documents. If relevant to the proceeding, the Parties agree that validated sampling data generated in accordance with the QAPP(s) and reviewed and approved by EPA shall be admissible as evidence, without objection, in any proceeding under this Consent Decree. Settling Defendants shall ensure that EPA and State personnel and their authorized representatives are allowed access at reasonable times to all laboratories utilized by Settling Defendants in implementing this Consent Decree. In addition, Settling Defendants shall ensure that such laboratories shall analyze all samples submitted by EPA pursuant to the QAPP for quality assurance monitoring. Settling Defendants shall ensure that the laboratories they utilize for the analysis of samples taken pursuant to this Consent Decree perform all analyses according to accepted EPA methods. Accepted EPA methods consist of those methods which are documented in the "Contract Lab Program Statement of Work for Inorganic Analysis" and the "Contract Lab Program Statement of Work for Organic Analysis," dated February 1988, and any amendments made thereto during the course of the implementation of this Consent Decree; however, upon approval by EPA, after opportunity for review and comment by DTSC, Settling Defendants

1 may use other analytical methods which are as stringent as or more stringent than
2 the CLP- approved methods. Settling Defendants shall ensure that all laboratories
3 they use for analysis of samples taken pursuant to this Consent Decree participate
4 in an EPA or EPA-equivalent QA/QC program. Settling Defendants shall only use
5 laboratories that have a documented Quality System which complies with
6 ANSI/ASQC E4-1994, "Specifications and Guidelines for Quality Systems for
7 Environmental Data Collection and Environmental Technology Programs,"
8 (American National Standard, January 5, 1995), and "EPA Requirements for
9 Quality Management Plans (QA/R-2)," (EPA/240/B-01/002, March 2001) or
10 equivalent documentation as determined by EPA. EPA may consider laboratories
11 accredited under the National Environmental Laboratory Accreditation Program
12 (NELAP) as meeting the Quality System requirements. Settling Defendants shall
13 ensure that all field methodologies utilized in collecting samples for subsequent
14 analysis pursuant to this Decree will be conducted in accordance with the
15 procedures set forth in the QAPP approved by EPA.

16 20. Upon request, Settling Defendants shall allow split or duplicate
17 samples to be taken by EPA or its authorized representatives. Settling Defendants
18 shall notify EPA not less than 28 Days in advance of any sample collection activity
19 unless shorter notice is agreed to by EPA. In addition, EPA shall have the right to
20 take any additional samples that EPA deems necessary. Upon request, EPA shall
21 allow Settling Defendants to take split or duplicate samples of any samples they
22 take as part of the Plaintiff's oversight of Settling Defendants' implementation of
23 the Work. EPA will provide Settling Defendants copies of validated split sampling
24 results.

25 21. Settling Defendants shall submit to EPA the results of all sampling
26 and/or tests or other data obtained or generated by or on behalf of Settling
27 Defendants with respect to the Site and/or the implementation of this Consent
28 Decree, unless EPA agrees otherwise. Settling Defendants shall also provide one

1 copy of such results to any party performing work at the Site at the direction of
 2 EPA who is obligated or directed to provide substantially the same reports to
 3 Settling Defendants, unless EPA agrees otherwise.

4 22. Notwithstanding any provision of this Consent Decree, the United
 5 States hereby retains all of its information gathering and inspection authorities and
 6 rights, including enforcement actions related thereto, under CERCLA, RCRA and
 7 any other applicable statutes or regulations.

8 IX. ACCESS AND INSTITUTIONAL CONTROLS

9 23. If the Site, or any other property where access or land or water use
 10 restrictions are needed to implement response actions at the Site, is owned or
 11 controlled by any of the Settling Defendants, such Settling Defendant shall:

12 a. provide (i) the United States, (ii) DTSC, (iii) the other Settling
 13 Defendant, and (iv) persons performing response actions under EPA's direction,
 14 together with their respective representatives and contractors, with access at all
 15 reasonable times to the Site, or such other property, for the purpose of conducting
 16 any activity related to the Site including, but not limited to, the following activities:

- 17 (1) Monitoring the Work;
- 18 (2) Verifying any data or information submitted to the
 19 United States;
- 20 (3) Conducting investigations relating to contamination at or
 21 near the Site;
- 22 (4) Obtaining samples;
- 23 (5) Assessing the need for planning or implementing
 24 additional response actions at or near the Site;
- 25 (6) Assessing implementation of quality assurance and
 26 quality control practices as defined in the approved Quality Assurance
 27 Project Plans;
- 28 (7) Implementing the Work pursuant to the conditions set

1 forth in Paragraph 99 of this Consent Decree;

2 (8) Inspecting and copying records, operating logs, contracts,
3 or other documents maintained or generated by Settling Defendants or their agents,
4 consistent with Section XXV (Access to Information);

5 (9) Assessing Settling Defendants' compliance with this
6 Consent Decree; and

7 (10) Determining whether the Site or other property is being
8 used in a manner that is prohibited or restricted, or that may need to be prohibited
9 or restricted, by or pursuant to this Consent Decree;

10 b. refrain from using the Site, or such other property, in any
11 manner that would interfere with or adversely affect the implementation, integrity,
12 or protectiveness of remedial measures taken at the Site; and

13 c. execute and record in the Recorder's Office of Los Angeles
14 County, State of California, an easement, running with the land, that (i) grants a
15 right of access for the purpose of conducting any activity related to response
16 actions at the Site including, but not limited to, those activities listed in
17 Paragraph 23.a of this Consent Decree, and (ii) grants the right to enforce the land
18 or water use restrictions listed in Paragraph 23.b of this Consent Decree, or other
19 restrictions that EPA determines are necessary to implement, ensure non-
20 interference with, or ensure the protectiveness of remedial measures taken at the
21 Site. Such Settling Defendant shall grant the access rights and the rights to enforce
22 the land/water use restrictions to one or more of the following entities, and to their
23 respective representatives and contractors, as determined by EPA: (i) the United
24 States, on behalf of EPA, (ii) DTSC, (iii) the other Settling Defendant, (iv) persons
25 performing response actions under EPA's direction, and/or (v) other appropriate
26 grantees, as determined by EPA. Such Settling Defendant shall, within 45 Days of
27 entry of this Consent Decree, submit to EPA for review and approval with respect
28 to such property:

(1) A draft easement, in substantially the form attached hereto as Appendix F, that is enforceable under the laws of the State of California, and

(2) a current title insurance commitment or some other evidence of title acceptable to EPA, which shows title to the land described in the easement to be free and clear of all prior liens and encumbrances (except when those liens or encumbrances are approved by EPA or when, despite best efforts, Settling Defendant is unable to obtain release or subordination of such prior liens or encumbrances).

Within 15 Days of EPA's approval and acceptance of the easement and the title evidence, such Settling Defendant shall update the title search and, if it is determined that nothing has occurred since the effective date of the commitment to affect the title adversely, record the easement with the Recorder's Office of Los Angeles County. Within 30 Days of recording the easement, such Settling Defendants shall provide EPA with a final title insurance policy, or other final evidence of title acceptable to EPA, and a certified copy of the original recorded easement showing the clerk's recording stamps. If the easement is to be conveyed to the United States, the easement and title evidence (including final title evidence) shall be prepared in accordance with the U.S. Department of Justice Title Standards 2001, and approval of the sufficiency of title must be obtained as required by 40 U.S.C. § 255.

24. If any other property where access and/or land/water use restrictions are needed to implement this Consent Decree is owned or controlled by persons other than any of the Settling Defendants, Settling Defendants shall use best efforts to secure from such persons with respect to such property:

a. an agreement to provide access thereto for the following entities and for their respective representatives and contractors: (i) the United States, including EPA, (ii) DTSC, (iii) the Settling Defendants, and (iv) persons

1 performing response actions under EPA's direction, all for the purpose of
2 conducting any activity related to any response action at the Site, including, but not
3 limited to, those activities listed in Paragraph 23.a of this Consent Decree;

4 b. an agreement, enforceable by the Settling Defendants and the
5 United States, to refrain from using such other property, in any manner that would
6 interfere with or adversely affect the implementation, integrity, or protectiveness of
7 remedial measures taken at the Site; and

8 c. the execution and recordation in the Recorder's Office of Los
9 Angeles County, State of California, of an easement, running with the land, that (i)
10 grants a right of access for the purpose of conducting any activity related to the
11 Site including, but not limited to, all treatment facilities, pipelines, and wells used
12 to implement the Work as well as those activities listed in Paragraph 23.a of this
13 Consent Decree, and (ii) grants the right to enforce the land/water use restrictions
14 listed in Paragraph 23.b of this Consent Decree, or other restrictions that EPA
15 determines are necessary to implement, ensure non-interference with, or ensure the
16 protectiveness of remedial measures taken at the Site. The access rights and/or
17 rights to enforce land/water use restrictions shall be granted to one or more of the
18 following entities and to their respective representatives and contractors, as
19 determined by EPA: (i) the United States, including EPA, (ii) DTSC, (iii) the
20 Settling Defendants, (iv) persons performing response actions under EPA's
21 direction, and/or (v) other appropriate grantees, as determined by EPA. Within 45
22 Days of approval of the final Remedial Design, Settling Defendants shall submit to
23 EPA for review and approval with respect to such property:

24 (1) A draft easement, in substantially the form attached
25 hereto as Appendix F, that is enforceable under the laws of the State of
26 California, and

27 (2) a current title insurance commitment, or some other
28 evidence of title acceptable to EPA, which shows title to the land described

1 in the easement to be free and clear of all prior liens and encumbrances that
2 could impact the implementation of the Work (except when those liens or
3 encumbrances are approved by EPA or when, despite best efforts, Settling
4 Defendants are unable to obtain release or subordination of such prior liens
5 or encumbrances).

6 Within 15 Days of EPA's approval and acceptance of the easement and the title
7 evidence, Settling Defendants shall update the title search and, if it is determined
8 that nothing has occurred since the effective date of the commitment to affect the
9 title adversely, the easement shall be recorded with the Recorder's Office of Los
10 Angeles County. Within 30 Days of the recording of the easement, Settling
11 Defendants shall provide EPA with a final title insurance policy, or other final
12 evidence of title acceptable to EPA, and a certified copy of the original recorded
13 easement showing the clerk's recording stamps. If an easement is to be conveyed
14 to the United States, the easement and title evidence (including final title evidence)
15 shall be prepared in accordance with the U.S. Department of Justice Title
16 Standards 2001, and approval of the sufficiency of title must be obtained as
17 required by 40 U.S.C. § 255.

18 25. EPA may determine, in its unreviewable discretion, that the
19 requirements of Paragraph 24 are not necessary because an existing administrative
20 order, agreement or consent decree provides adequate access to address future
21 response actions anticipated at the Site.

22 26. For purposes of Paragraphs 23 and 24 of this Consent Decree, "best
23 efforts" includes the payment of reasonable sums of money in consideration of
24 access, access easements, land or water use restrictions, restrictive easements, or an
25 agreement to release or subordinate a prior lien or encumbrance. If (a) any access
26 or land or water use restriction agreements required by Paragraphs 24.a or 24.b of
27 this Consent Decree are not obtained within 45 Days of the date of approval of the
28 final Remedial Design, (b) any access easements or restrictive easements required

1 by Paragraph 24.c of this Consent Decree are not submitted to EPA in draft form
2 within 45 Days of the date of entry of this Consent Decree, or (c) Settling
3 Defendants are unable to obtain an agreement pursuant to Paragraph 23.c.(1) or
4 Paragraph 24.c.(1) from the holder of a prior lien or encumbrance to release or
5 subordinate such lien or encumbrance to the easement being created pursuant to
6 this consent decree within 45 Days of the date of approval of the final Remedial
7 Design, Settling Defendants shall promptly notify the United States in writing, and
8 shall include in that notification a summary of the steps that Settling Defendants
9 have taken to attempt to comply with Paragraph 23 or 24 of this Consent Decree.
10 The United States may, as it deems appropriate, assist Settling Defendants in
11 obtaining access or land/water use restrictions, either in the form of contractual
12 agreements or in the form of easements running with the land, or in obtaining the
13 release or subordination of a prior lien or encumbrance. Settling Defendants shall
14 reimburse the United States in accordance with the procedures in Section XVI
15 (Payments for Response Costs and Civil Penalties), for all costs incurred, direct or
16 indirect, by the United States in obtaining such access, land/water use restrictions,
17 and/or the release/subordination of prior liens or encumbrances including, but not
18 limited to, the cost of attorney time and the amount of monetary consideration paid
19 or just compensation.

20 27. If EPA determines that land or water use restrictions in the form of
21 state or local laws, regulations, ordinances or other governmental controls are
22 needed to implement the Remedial Action, or ensure non-interference therewith,
23 Settling Defendants shall cooperate with EPA's efforts to secure such governmental
24 controls.

25 28. Notwithstanding any provision of this Consent Decree, the United
26 States retains all of its access authorities and rights, as well as all of its rights to
27 require land or water use restrictions, including enforcement authorities related
28 thereto, under CERCLA, RCRA and any other applicable statute or regulations.

X. REPORTING REQUIREMENTS

29. In addition to any other requirement of this Consent Decree, Settling Defendants shall submit to EPA, DTSC, and any party performing work at the Site at the direction of EPA, written bi-monthly progress reports that: (a) describe the actions which have been taken toward achieving compliance with this Consent Decree during the previous two months; (b) include a summary of all results of sampling and tests and all other data received or generated by Settling Defendants or their contractors or agents in the previous two months; (c) identify all work plans, plans and other deliverables required by this Consent Decree completed and submitted during the previous two months; (d) describe all actions, including, but not limited to, data collection and implementation of work plans, which are scheduled for the next six weeks and provide other information relating to the progress of construction, including but not limited to critical path diagrams, Gantt charts and Pert charts; (e) include information regarding the percentage of completion, unresolved delays encountered or anticipated that may affect the future schedule for implementation of the Work, and a description of efforts made to mitigate those delays or anticipated delays; (f) include any modifications to the work plans or other schedules that Settling Defendants have proposed to EPA or that have been approved by EPA; and (g) describe all activities undertaken in support of the Community Relations Plan during the previous two months and those to be undertaken in the next six weeks. Settling Defendants shall submit these progress reports to EPA, DTSC and any party performing work at the Site at the direction of EPA, by the tenth Day of every second month following the lodging of this Consent Decree until EPA approves the Final Construction Inspection Report. If requested by EPA, Settling Defendants shall also provide briefings for EPA to discuss the progress of the Work. After EPA approves the Final Construction Inspection Report, Settling Defendants shall submit Quarterly Compliance Monitoring Reports and Annual Performance Evaluation Reports

1 pursuant to the SOW. Settling Defendants shall provide one copy of the bi-
2 monthly progress reports and one copy of the Quarterly Compliance Monitoring
3 Reports and the Annual Performance Evaluation Reports to any party performing
4 work at the Site under the direction of EPA who is obligated or directed to provide
5 substantially the same reports to Settling Defendants.

6 30. The Settling Defendants shall notify EPA of any significant change in
7 the schedule described in the bi-monthly progress reports, Quarterly Compliance
8 Monitoring Reports and Annual Performance Evaluation Reports for the
9 performance of any activity, including, but not limited to, data collection and
10 implementation of work plans, no later than seven Days prior to the performance of
11 the activity.

12 31. Within 30 Days after the end of each calendar-year six-month period
13 (i.e., by July 30 and January 30) after lodging of this Consent Decree and until
14 Settling Defendants submit the SEP Completion Report pursuant to Paragraph 65,
15 Settling Defendants shall submit a report for the preceding period that shall include
16 a discussion of Settling Defendants' progress in satisfying its obligations in
17 connection with the SEP under Section XVIII (Supplemental Environmental
18 Projects) of this Decree including, at a minimum, a narrative description of
19 activities undertaken, compliance with the schedules or milestones set forth in the
20 SEP Implementation Plan, and a summary of costs incurred since the previous
21 report.

22 32. Upon the occurrence of any event during performance of the Work
23 that Settling Defendants are required to report pursuant to Section 103 of
24 CERCLA or Section 304 of the Emergency Planning and Community Right-to-
25 know Act (EPCRA), Settling Defendants shall within 24 hours of the onset of such
26 event orally notify the EPA Project Coordinator or the Alternate EPA Project
27 Coordinator (in the event of the unavailability of the EPA Project Coordinator), or,
28 in the event that neither the EPA Project Coordinator or Alternate EPA Project

1 Coordinator is available, the Emergency Response Section, Region 9, United
2 States Environmental Protection Agency. These reporting requirements are in
3 addition to the reporting required by CERCLA Section 103 or EPCRA Section
4 304.

5 33. Within 20 Days of the onset of such an event, Settling Defendants
6 shall furnish to Plaintiff a written report, signed by the Settling Defendants' Project
7 Coordinator, setting forth the events which occurred and the measures taken, and to
8 be taken, in response thereto. Within 30 Days of the conclusion of such an event,
9 Settling Defendants shall submit a report setting forth all actions taken in response
10 thereto.

11 34. Settling Defendants shall submit 4 copies of all plans, reports, and
12 data required by the SOW, the Remedial Design Work Plan, the Remedial Action
13 Work Plan, or any other approved plans to EPA in accordance with the schedules
14 set forth in such plans. Settling Defendants shall simultaneously submit 3 copies
15 of all such plans, reports and data to DTSC. Settling Defendants shall also submit
16 in electronic form (e.g. on compact disc) all portions of any report or other
17 deliverable Settling Defendants are required to submit pursuant to the provisions of
18 this Consent Decree.

19 35. All reports and other documents submitted by Settling Defendants to
20 EPA (other than the bi-monthly progress reports referred to above) which purport
21 to document Settling Defendants' compliance with the terms of this Consent
22 Decree shall be signed by an authorized representative of the Settling Defendants.

23 XI. EPA APPROVAL OF PLANS AND OTHER SUBMISSIONS

24 36. After review of any plan, report or other item that is required to be
25 submitted for approval pursuant to this Consent Decree, EPA, after reasonable
26 opportunity for review and comment by DTSC, shall: (a) approve, in whole or in
27 part, the submission; (b) approve the submission upon specified conditions; (c)
28 modify the submission to cure the deficiencies; (d) disapprove, in whole or in part,

1 the submission, directing that the Settling Defendants modify the submission; or
 2 (e) any combination of the above. However, EPA shall not modify a submission
 3 without first providing Settling Defendants at least one notice of deficiency and an
 4 opportunity to cure within 21 Days or such longer period as EPA determines to be
 5 reasonable, except where to do so would cause serious disruption to the Work or
 6 where a previous submission or submissions have been disapproved due to
 7 material defects, and the deficiencies in the submission or submissions under
 8 consideration are due to a bad faith lack of effort to submit an acceptable
 9 deliverable.

10 37. In the event of approval, approval upon conditions, or modification by
 11 EPA, pursuant to Paragraph 36(a), (b), or (c), Settling Defendants shall proceed to
 12 take any action required by the plan, report, or other item as approved or modified
 13 by EPA, subject only to their right to invoke dispute resolution procedures set
 14 forth in Section XX (Dispute Resolution) with respect to the modifications or
 15 conditions made by EPA. In the event that EPA modifies the submission to cure
 16 deficiencies pursuant to Paragraph 36(c) and the submission had a material defect,
 17 EPA retains its right to seek Stipulated Penalties, as provided in Section XXI
 18 (Stipulated Penalties).

19 38. Resubmission of Plans.

20 a. Upon receipt of a notice of disapproval pursuant to
 21 Paragraph 36(d), Settling Defendants shall, within 21 Days or such longer time as
 22 specified by EPA in such notice, correct the deficiencies and resubmit the plan,
 23 report, or other item for approval. Any Stipulated Penalties applicable to the
 24 submission, as provided in Section XXI (Stipulated Penalties), shall accrue during
 25 the 21-Day period or otherwise specified period but shall not be payable unless the
 26 resubmission is disapproved or modified due to a material defect as provided in
 27 Paragraphs 39 and 40.

28 b. Notwithstanding the receipt of a notice of disapproval pursuant

1 to Paragraph 36(d), Settling Defendants shall proceed, at the direction of EPA, to
 2 take any action required by any non-deficient portion of the submission.
 3 Implementation of any non-deficient portion of a submission shall not relieve
 4 Settling Defendants of any liability for Stipulated Penalties under Section XXI
 5 (Stipulated Penalties).

6 39. In the event that a resubmitted plan, report, or other item, or portion
 7 thereof, is disapproved by EPA, EPA may again require the Settling Defendants to
 8 correct the deficiencies, in accordance with the preceding Paragraphs. EPA also
 9 retains the right to modify or develop the plan, report, or other item. Settling
 10 Defendants shall implement any such plan, report, or item as modified or
 11 developed by EPA, subject only to their right to invoke the procedures set forth in
 12 Section XX (Dispute Resolution).

13 40. If upon resubmission, a plan, report, or item is disapproved or
 14 modified by EPA due to a material defect, Settling Defendants shall be deemed to
 15 have failed to submit such plan, report, or item timely and adequately, unless
 16 Settling Defendants invoke the dispute resolution procedures set forth in Section
 17 XX (Dispute Resolution), and EPA's action is overturned pursuant to that Section.
 18 The provisions of Section XX (Dispute Resolution) and Section XXI (Stipulated
 19 Penalties) shall govern the implementation of the Work and accrual and payment
 20 of any Stipulated Penalties during Dispute Resolution. If EPA's disapproval or
 21 modification is upheld, Stipulated Penalties shall accrue for such violation from the
 22 date on which the initial submission was originally required, as provided in Section
 23 XXI (Stipulated Penalties).

24 41. All plans, reports, and other items required to be submitted to EPA
 25 under this Consent Decree shall, upon approval or modification by EPA, be
 26 enforceable under this Consent Decree. In the event EPA approves or modifies a
 27 portion of a plan, report, or other item required to be submitted to EPA under this
 28 Consent Decree, the approved or modified portion shall be enforceable under this

1 Consent Decree.

2 XII. PROJECT COORDINATORS

3 42. Within 20 Days of lodging this Consent Decree, Settling Defendants
4 and EPA will notify each other, in writing, of the name, address and telephone
5 number of their respective designated Project Coordinators and Alternate Project
6 Coordinators. If a Project Coordinator or Alternate Project Coordinator initially
7 designated is changed, the identity of the successor will be given to the other
8 Parties at least 5 Working Days before the changes occur, unless impracticable, but
9 in no event later than the actual Day the change is made. The Settling Defendants'
10 Project Coordinator shall be subject to disapproval by EPA and shall have the
11 technical expertise sufficient to adequately oversee all aspects of the Work. The
12 Settling Defendants' Project Coordinator shall not be an attorney for any of the
13 Settling Defendants in this matter. He or she may assign other representatives,
14 including other contractors, to serve as a Site representative for oversight of
15 performance of daily operations during remedial activities.

16 43. Plaintiff may designate other representatives, including, but not
17 limited to, EPA and DTSC employees, and federal and state contractors and
18 consultants, to observe and monitor the progress of the Work undertaken pursuant
19 to this Consent Decree. EPA's Project Coordinator and Alternate Project
20 Coordinator shall have the authority lawfully vested in a Remedial Project
21 Manager (RPM) and an On-Scene Coordinator (OSC) by the National Contingency
22 Plan, 40 C.F.R. Part 300. In addition, EPA's Project Coordinator or Alternate
23 Project Coordinator shall have authority, consistent with the National Contingency
24 Plan, to halt any Work required by this Consent Decree and to take any necessary
25 response action when s/he determines that conditions at the Site constitute an
26 emergency situation or may present an immediate threat to public health or welfare
27 or the environment due to release or threatened release of Waste Material.

28 44. EPA's Project Coordinator and Settling Defendants' Project

1 Coordinator will meet in person or confer telephonically on a monthly basis unless
2 EPA determines that less frequent meetings or conferences are required.

3 XIII. ASSURANCE OF ABILITY TO COMPLETE WORK

4 45. Within 30 Days of entry of this Consent Decree, Settling Defendants
5 shall establish and maintain financial security in the amount of \$26.5 million in one
6 or more of the following forms:

- 7 a. A surety bond guaranteeing performance of the Work;
8 b. One or more irrevocable letters of credit equaling the total
9 estimated cost of the Work;
10 c. A trust fund;
11 d. A guarantee to perform the Work by one or more parent
12 corporations or subsidiaries, or by one or more unrelated corporations that have a
13 substantial business relationship with at least one of the Settling Defendants;
14 e. A demonstration that one or more of the Settling Defendants
15 satisfy the requirements of 40 C.F.R. Part 264.143(f). For purposes of this
16 Paragraph, references in 40 CFR 264.143 (f) to the "sum of current closure and
17 post-closure costs estimates and the current plugging and abandonment costs
18 estimates" shall mean the amount of financial security specified above; or
19 f. An insurance policy in form and substance satisfactory to EPA.

20 46. If the Settling Defendants seek to demonstrate the ability to complete
21 the Work through a guarantee by a third party pursuant to Paragraph 45.d of this
22 Consent Decree, Settling Defendants shall demonstrate that the guarantor satisfies
23 the requirements of 40 C.F.R. Part 264.143(f). If Settling Defendants seek to
24 demonstrate their ability to complete the Work by means of the financial test or the
25 corporate guarantee pursuant to Paragraph 45.d or 45.e, they shall resubmit sworn
26 statements conveying the information required by 40 C.F.R. Part 264.143(f)
27 annually, on the first Day of April in each year after the Settling Defendants
28 establish such guarantee. In the event that EPA, after a reasonable opportunity for

1 review and comment by the State, determines at any time that the financial
2 assurances provided pursuant to this Section are inadequate, Settling Defendants
3 shall, within 30 Days of receipt of notice of EPA's determination, obtain and
4 present to EPA for approval one of the other forms of financial assurance listed in
5 Paragraph 45 of this Consent Decree. Settling Defendants' inability to demonstrate
6 financial ability to complete the Work shall not excuse performance of any
7 activities required under this Consent Decree.

8 47. If Settling Defendants can show that the estimated cost to complete
9 the remaining Work has diminished below the amount set forth in Paragraph 45
10 above after entry of this Consent Decree, Settling Defendants may, on the first Day
11 of April in each year after the Settling Defendants establish financial security
12 pursuant to Paragraph 45 of this Consent Decree, or at any other time agreed to by
13 the Parties, reduce the amount of the financial security provided under this Section
14 to the estimated cost of the remaining Work to be performed. Settling Defendants
15 shall submit a proposal for such reduction to EPA, in accordance with the
16 requirements of this Section, and may reduce the amount of the security upon
17 approval by EPA. In the event of a dispute under Section XX (Dispute
18 Resolution), Settling Defendants may reduce the amount of the security in
19 accordance with the final administrative or judicial decision resolving the dispute.

20 48. Settling Defendants may change the form of financial assurance
21 provided under this Section at any time, upon notice to and approval by EPA,
22 provided that the new form of assurance meets the requirements of this Section. In
23 the event of a dispute under Section XX (Dispute Resolution), Settling Defendants
24 may change the form of the financial assurance only in accordance with the final
25 administrative or judicial decision resolving the dispute.

26 49. Settling Defendants' obligation to establish and maintain financial
27 security under this Section shall terminate upon EPA's issuance of a Certification
28 of Completion of the Remedial Action pursuant to Paragraph 51.b of this Consent

1 Decree.

2 XIV. CERTIFICATION OF COMPLETION

3 50. "Operational and Functional"

4 a. Within 30 Days after Settling Defendants conclude that the
5 Remedial Action is Operational and Functional, Settling Defendants shall schedule
6 and conduct a pre-certification inspection to be attended by Settling Defendants
7 and EPA. If, after the pre-certification inspection, the Settling Defendants still
8 believe that the Remedial Action is Operational and Functional, they shall submit a
9 written report requesting certification to EPA for approval, with a copy to the
10 State, pursuant to Section XI (EPA Approval of Plans and Other Submissions)
11 within 30 Days of the inspection. In the report, a registered professional engineer
12 and the Settling Defendants' Project Coordinator shall state that the Remedial
13 Action is Operational and Functional. The written report shall include as-built
14 drawings signed and stamped by a professional engineer. The report shall contain
15 the following statement, signed by a responsible corporate official of a Settling
16 Defendant or the Settling Defendants' Project Coordinator:

17 To the best of my knowledge, after thorough investigation, I certify
18 that the information contained in or accompanying this submission is
19 true, accurate and complete. I am aware that there are significant
penalties for submitting false information, including the possibility of
fine and imprisonment for knowing violations.

20 If, after completion of the pre-certification inspection and receipt and review of the
21 written report, EPA, after reasonable opportunity to review and comment by
22 DTSC, determines that the Remedial Action is not Operational and Functional,
23 EPA will notify Settling Defendants in writing of the activities that must be
24 undertaken by Settling Defendants pursuant to this Consent Decree in order for the
25 Remedial Action to be Operational and Functional. EPA will set forth in the notice
26 a schedule for performance of such activities consistent with the Consent Decree
27 and the SOW or require the Settling Defendants to submit a schedule to EPA for
28 approval pursuant to Section XI (EPA Approval of Plans and Other Submissions).

1 Settling Defendants shall perform all activities described in the notice in
2 accordance with the specifications and schedules established pursuant to this
3 Paragraph, subject to their right to invoke the dispute resolution procedures set
4 forth in Section XX (Dispute Resolution).

5 b. If EPA concludes, based on the initial or any subsequent report
6 requesting certification, and after a reasonable opportunity for review and
7 comment by DTSC, that the Remedial Action is Operational and Functional, EPA
8 will so certify in writing to Settling Defendants.

9 c. If EPA fails to certify that the Remedial Action is Operational
10 and Functional within 90 Days after a request, EPA shall be deemed to have denied
11 the request, unless Settling Defendants agree to an extension of time. Settling
12 Defendants may, at any time thereafter, invoke Dispute Resolution pursuant to
13 Section XX (Dispute Resolution).

14 d. Nothing herein shall preclude Settling Defendants from
15 requesting, and EPA from granting, pursuant to the same procedures set forth in
16 Subparagraphs a-c of this Paragraph, certification that a phase of the Remedial
17 Action is Operational and Functional; provided, however, that any such
18 certification shall be conditioned on such phase remaining Operational and
19 Functional at the time Settling Defendants request certification for the final phase
20 of the Remedial Action. In the event Settling Defendants request certification that
21 a phase of the Remedial Action is Operational and Functional, and such request is
22 granted, the resulting certification shall not affect the Operational and Functional
23 Date.

24 e. Upon approval of the certification report by EPA or pursuant to
25 a ruling by the Court, the Operational and Functional Date shall be the date when
26 the last report requesting certification of the final phase of the Remedial Action
27 was submitted.

28 f. The Operational and Functional Date established pursuant to

1 this Paragraph shall not be affected if existing contamination greater than or equal
2 to ten-times the levels listed in Table 2 of the SOW has migrated vertically into the
3 intermediate zone and this existing contamination prevents Settling Defendants
4 from meeting the Performance Criteria, provided the Settling Defendants are
5 taking the response actions determined by EPA to be necessary to reverse the trend
6 pursuant to the SOW.

7 g. Once EPA has determined that the Remedial Action is
8 Operational and Functional pursuant to this Paragraph, the Operational and
9 Functional Date shall not be affected in the event EPA subsequently determines,
10 pursuant to Paragraph 13, that modification to the Work specified in the SOW or in
11 work plans developed pursuant to the SOW is necessary to achieve and maintain
12 the Performance Criteria, to meet discharge ARARs, or to implement Mid-Valley
13 Monitoring.

14 51. Certification of Completion.

15 a. No later than 90 Days before, and no sooner than 120 Days
16 prior to, the eight-year anniversary of the Operational and Functional Date, and
17 upon Settling Defendants concluding that the Remedial Action is still Operational
18 and Functional, Settling Defendants shall schedule a pre-certification inspection to
19 be attended by Settling Defendants and EPA. The Settling Defendants shall submit
20 a Facility Status Package to EPA which shall include, but not be limited to, all
21 maintenance reports, performance reports, sampling results, and all other
22 deliverables updated as appropriate to reflect the performance and condition of the
23 containment and Mid-Valley Monitoring systems including all wells, pipelines,
24 and treatment facilities. If, after the pre-certification inspection, the Settling
25 Defendants still believe that the Remedial Action is Operational and Functional,
26 Settling Defendants shall submit a written report by a registered professional
27 engineer, in accordance with the SOW, stating that the Remedial Action is
28 Operational and Functional. The report shall contain the following statement,

1 signed by a responsible corporate official of a Settling Defendant or by the Settling
2 Defendants' Project Coordinator:

3 To the best of my knowledge, after thorough investigation, I certify
4 that the information contained in or accompanying this submission is
5 true, accurate and complete. I am aware that there are significant
penalties for submitting false information, including the possibility of
fine and imprisonment for knowing violations.

6 If, after review of the written report, EPA, after reasonable opportunity to review
7 and comment by DTSC, determines that repairs to the containment or Mid-Valley
8 Monitoring systems are needed, and/or additional documentation regarding access
9 is needed, EPA will notify Settling Defendants in writing of the activities that
10 must be undertaken by Settling Defendants to effect such repairs and/or to provide
11 the necessary documentation. EPA will set forth in the notice a schedule for
12 performance of such activities consistent with the Consent Decree and the SOW or
13 require the Settling Defendants to submit a schedule to EPA for approval pursuant
14 to Section XI (EPA Approval of Plans and Other Submissions). Settling
15 Defendants shall perform all activities described in the notice in accordance with
16 the specifications and schedules established therein, subject to their right to invoke
17 the dispute resolution procedures set forth in Section XX (Dispute Resolution).

18 b. If EPA concludes, based on the initial or any subsequent
19 request for Certification of Completion by Settling Defendants that the Remedial
20 Action is still Operational and Functional, EPA will so notify the Settling
21 Defendants in writing. This notification shall constitute the Certification of
22 Completion of the Remedial Action for purposes of this Consent Decree,
23 including, but not limited to, Section XXII (Covenants Not to Sue by Plaintiff).

24 XV. EMERGENCY RESPONSE

25 52. In the event of any action or occurrence caused by or related to the
26 performance of the Work which causes or threatens a release of Waste Material
27 from the Site that constitutes an emergency situation or may present an immediate
28 threat to public health or welfare or the environment, Settling Defendants shall,

1 subject to Paragraph 53, immediately take all appropriate action to prevent, abate,
 2 or minimize such release or threat of release, and shall immediately notify the
 3 EPA's Project Coordinator, or, if the Project Coordinator is unavailable, EPA's
 4 Alternate Project Coordinator. If neither of these persons is available, the Settling
 5 Defendants shall notify the EPA Emergency Response Unit, Region 9. Settling
 6 Defendants shall take such actions in consultation with EPA's Project Coordinator
 7 or other available authorized EPA officer and in accordance with all applicable
 8 provisions of the Health and Safety Plans, the Contingency Plans, and any other
 9 applicable plans or documents developed pursuant to the SOW. In the event that
 10 Settling Defendants fail to take appropriate response action as required by this
 11 Section, and EPA takes such action instead, Settling Defendants shall reimburse
 12 EPA all costs of the response action not inconsistent with the NCP pursuant to
 13 Section XVI (Payments for Response Costs and Civil Penalties).

14 53. Nothing in the preceding Paragraph or in this Consent Decree shall be
 15 deemed to limit any authority of the United States (i) to take all appropriate action
 16 to protect human health and the environment or to prevent, abate, respond to, or
 17 minimize an actual or threatened release of Waste Material on, at, or from the Site,
 18 or (ii) to direct or order such action, or seek an order from the Court, to protect
 19 human health and the environment or to prevent, abate, respond to, or minimize an
 20 actual or threatened release of Waste Material on, at, or from the Site, subject to
 21 Section XXII (Covenants Not to Sue by Plaintiff).

22 XVI. PAYMENTS FOR RESPONSE COSTS AND CIVIL PENALTIES

23 54. Payments for Past Response Costs.

24 a. Within 15 Working Days after Settling Defendants receive
 25 notice from the United States that this Consent Decree has been lodged, Settling
 26 Defendants shall deposit \$800,000 into an escrow account, which Settling
 27 Defendants shall establish, bearing interest on commercially reasonable terms, in a
 28 federally-chartered bank (the "Escrow Account"). If the Consent Decree is not

1 entered by the Court, and the time for any appeal of that decision has run or if the
2 Court's denial of entry is upheld on appeal, the monies placed in escrow, together
3 with accrued interest thereon, shall be returned to Settling Defendants. If the
4 Consent Decree is entered by the Court, Settling Defendants shall, within 30 Days
5 thereof, cause the monies in the Escrow Account to be paid to EPA in accordance
6 with Paragraph 54.b.

7 b. Payment by Settling Defendants from the Escrow Account shall
8 be made by FedWire Electronic Funds Transfer ("EFT") to the U.S. Department of
9 Justice account in accordance with current EFT procedures, referencing USAO File
10 Number 2005V00443, EPA Site/Spill ID Number O98V, DOJ Case Number 90-
11 11-2-354/15, and the civil action number of this case. Payment shall be made in
12 accordance with instructions provided to the Settling Defendants by the Financial
13 Litigation Unit of the United States Attorney's Office for the Central District of
14 California following lodging of the Consent Decree. Any payments received by
15 the Department of Justice after 4:00 p.m. (Eastern Time) will be credited on the
16 next Working Day.

17 c. At the time of payment, Settling Defendants shall send notice
18 that payment has been made to the United States, to EPA and to the Regional
19 Accounting Contact, in accordance with Section XXVII (Notices and
20 Submissions).

21 d. The total amount to be paid by Settling Defendants specified
22 pursuant to this Paragraph shall be deposited in the Puente Valley Operable Unit
23 Special Account within the EPA Hazardous Substance Superfund. This Special
24 Account shall be retained and used to conduct or finance response actions at or in
25 connection with the Site, or the San Gabriel Valley Superfund Sites (Areas 1- 4), or
26 may be transferred by EPA to the EPA Hazardous Substance Superfund.

27 55. Payments for Future Response Costs.

28 a. Settling Defendants shall pay to EPA (i) that portion of Future

1 Response Costs that the United States incurs pertaining to the Work, incurred in a
 2 manner not inconsistent with the National Contingency Plan, and incurred prior to
 3 the date 8 years from the Operational and Functional Date; and (ii) oversight costs
 4 incurred by EPA in connection with the SEP.

5 b. On approximately an annual basis the United States will send
 6 Settling Defendants a bill requiring payment that includes a certified cost
 7 summary, which includes direct and indirect costs incurred by EPA and its
 8 contractors, and a DOJ-prepared cost summary which reflects costs incurred by
 9 DOJ and its contractors, if any. Settling Defendants shall make all payments
 10 within 45 Days of Settling Defendants' receipt of each bill requiring payment,
 11 except as otherwise provided in the following Paragraph. Settling Defendants shall
 12 make all payments required by this Paragraph by FedWire EFT, pursuant to the
 13 instructions set forth in Paragraph 54.b, or by a certified check or cashier's check
 14 made payable to "EPA Hazardous Substance Superfund," referencing the name and
 15 address of the party making the payment, EPA Site/Spill ID Number 098V, DOJ
 16 Number 90-11-2-354/15, and the civil action number of this case. Settling
 17 Defendants shall send the check(s) to:

18 EPA – Cincinnati Accounting Operations
 19 Attn: Region 9 Superfund Receivables
 20 P.O. Box 371099M
 Pittsburgh, PA 15251

21 c. At the time of payment, Settling Defendants shall send notice
 22 that payment has been made to the United States, to EPA and to the Regional
 23 Accounting Contact, in accordance with Section XXVII (Notices and
 24 Submissions).

25 d. Settling Defendants' payments pursuant to this Paragraph shall
 26 be deposited in the Puente Valley Operable Unit Special Account. This Special
 27 Account shall to be retained and used to conduct or finance response actions at or
 28 in connection with the Site, or the San Gabriel Valley Superfund Sites (Areas 1- 4),

1 or may be transferred by EPA from this Special Account to the EPA Hazardous
2 Substance Superfund.

3 56. Settling Defendants may request reasonable supporting documentation
4 for any oversight costs within 15 Days of receipt of a bill. Settling Defendants
5 may contest payment of any Future Response Costs under Paragraph 55 if they
6 determine that the United States has made an accounting error or if they allege that
7 a cost item that is included represents costs that are inconsistent with the NCP or
8 are outside the scope of Paragraph 55. Such objection shall be made in writing
9 within 30 Days of receipt of the contested bill, or, if supporting documentation is
10 requested, within 15 Days of receipt of the supporting documentation, and must be
11 sent to the United States pursuant to Section XXVII (Notices and Submissions).
12 Any such objection shall specifically identify the contested Future Response Costs
13 and the basis for objection. In the event of an objection, Settling Defendants shall,
14 simultaneously with submitting the objection, pay all uncontested Future Response
15 Costs in the manner described in Paragraph 55. Simultaneously, Settling
16 Defendants shall establish an interest-bearing escrow account in a federally-insured
17 bank duly chartered in the State of California and remit to that escrow account
18 funds equivalent to the amount of the contested Future Response Costs. Settling
19 Defendants shall send to the United States, as provided in Section XXVII (Notices
20 and Submissions), a copy of the transmittal letter and the check remitting the
21 uncontested Future Response Costs, together with a copy of the correspondence
22 that establishes and funds the escrow account, which shall include information
23 containing the identity of the bank and bank account under which the escrow
24 account is established, as well as a bank statement showing the initial balance of
25 the escrow account. Simultaneously with establishment of the escrow account,
26 Settling Defendants shall initiate the dispute resolution procedures in Section XX
27 (Dispute Resolution). If the United States prevails in the dispute, within 5 Days of
28 the resolution of the dispute, Settling Defendants shall pay the sums due (with

1 accrued interest) to the United States in the manner described in Paragraph 55. If
2 Settling Defendants prevail concerning any aspect of the contested costs, Settling
3 Defendants shall pay all contested costs (plus associated accrued Interest) as to
4 which they did not prevail to the United States in the manner described in
5 Paragraph 55; Settling Defendants shall be disbursed any balance of the escrow
6 account. The dispute resolution procedures set forth in this Paragraph in
7 conjunction with the procedures set forth in Section XX (Dispute Resolution) shall
8 be the exclusive mechanisms for resolving disputes regarding the Settling
9 Defendants' obligation to reimburse the United States for its Future Response
10 Costs.

11 57. Payment of Civil Penalty. Within 30 Days after the Effective Date of
12 this Consent Decree, Settling Defendants shall pay the United States the sum of
13 \$125,000 in settlement of claims for a civil penalty and punitive damages.
14 Payment shall be made by FedWire EFT to the U.S. Department of Justice in
15 accordance with instructions to be provided to Settling Defendants by the
16 Financial Litigation Unit of the U.S. Attorney's Office for the Central District of
17 California following lodging of this Consent Decree. At the time of payment,
18 Settling Defendants shall simultaneously send written notice of payment and a
19 copy of any transmittal documentation (which should reference DOJ case number
20 90-11-2-354/15 and the civil action number of this case to the United States in
21 accordance with Section XXVII of this Settlement Agreement (Notices and
22 Submissions).

23 58. In the event that the payments required by Paragraphs 54 and 57 are
24 not made within 30 Days of the Effective Date or the payments required by
25 Paragraph 55 are not made within 30 Days of the Settling Defendants' receipt of
26 the bill requiring payment, Settling Defendants shall pay Interest on the unpaid
27 balance. Interest to be paid on Past Response Costs and civil penalties under this
28 Paragraph shall begin to accrue on the Effective Date. Interest on Future Response

1 Costs shall begin to accrue on the date of the bill for those costs. Interest shall
2 accrue through the date of the Settling Defendants' payment. Payments of Interest
3 made under this Paragraph shall be in addition to such other remedies or sanctions
4 available to Plaintiff by virtue of Settling Defendants' failure to make timely
5 payments under this Section, including but not limited to payment of Stipulated
6 Penalties pursuant to Paragraph 83. The Settling Defendants shall make all
7 payments required by this Paragraph in the manner described in Paragraph 55.

8 XVII. INDEMNIFICATION AND INSURANCE

9 59. Settling Defendants' Indemnification of the United States.

10 a. The United States does not assume any liability by entering into
11 this agreement or by virtue of any designation of Settling Defendants as EPA's
12 authorized representatives under Section 104(e) of CERCLA. Settling Defendants
13 shall indemnify, save and hold harmless the United States and its officials, agents,
14 employees, contractors, subcontractors, or representatives for or from any and all
15 claims or causes of action arising from, or on account of, negligent or other
16 wrongful acts or omissions of Settling Defendants, their officers, directors,
17 employees, agents, contractors, subcontractors, and any persons acting on their
18 behalf or under their control, in carrying out activities pursuant to this Consent
19 Decree, including, but not limited to, any claims arising from any designation of
20 Settling Defendants as EPA's authorized representatives under Section 104(e) of
21 CERCLA. Further, the Settling Defendants agree to pay the United States all costs
22 it incurs including, but not limited to, attorneys fees and other expenses of
23 litigation and settlement arising from, or on account of, claims made against the
24 United States based on negligent or other wrongful acts or omissions of Settling
25 Defendants, their officers, directors, employees, agents, contractors,
26 subcontractors, and any persons acting on their behalf or under their control, in
27 carrying out activities pursuant to this Consent Decree. The United States shall not
28 be held out as a party to any contract entered into by or on behalf of Settling

1 Defendants in carrying out activities pursuant to this Consent Decree. Neither the
2 Settling Defendants nor any such contractor shall be considered an agent of the
3 United States.

4 b. The United States shall give Settling Defendants notice of any
5 claim for which the United States plans to seek indemnification pursuant to
6 Paragraph 59, and shall consult with Settling Defendants prior to settling such
7 claim.

8 60. Settling Defendants waive all claims against the United States for
9 damages or reimbursement or for set-off of any payments made or to be made to
10 the United States arising from or on account of any contract, agreement, or
11 arrangement between any one or more of Settling Defendants and any person for
12 performance of Work on or relating to the Site, including, but not limited to, claims
13 on account of construction delays. In addition, Settling Defendants shall
14 indemnify and hold harmless the United States with respect to any and all claims
15 for damages or reimbursement arising from or on account of any contract,
16 agreement, or arrangement between any one or more of Settling Defendants and
17 any person for performance of Work on or relating to the Site, including, but not
18 limited to, claims on account of construction delays.

19 61. No later than 15 Days before commencing any on-site Work, Settling
20 Defendants shall secure, and shall maintain comprehensive general liability
21 insurance with limits of \$5 million, combined single limit, and automobile liability
22 insurance with limits of \$2 million, combined single limit, naming the United
23 States as an additional insured. In addition, for the duration of this Consent
24 Decree, Settling Defendants shall satisfy, or shall ensure that their contractors or
25 subcontractors satisfy, all applicable laws and regulations regarding the provision
26 of worker's compensation insurance for all persons performing the Work on behalf
27 of Settling Defendants in furtherance of this Consent Decree. Prior to
28 commencement of the Work under this Consent Decree, Settling Defendants shall

1 provide to EPA certificates of such insurance and a copy of each insurance policy.
2 Settling Defendants shall resubmit such certificates and copies of policies each
3 year on the anniversary of the Effective Date. If Settling Defendants demonstrate
4 by evidence satisfactory to EPA that any contractor or subcontractor maintains
5 insurance equivalent to that described above, or insurance covering the same risks
6 but in a lesser amount, then, with respect to that contractor or subcontractor,
7 Settling Defendants need provide only that portion of the insurance described
8 above which is not maintained by the contractor or subcontractor.

9 XVIII. SUPPLEMENTAL ENVIRONMENTAL PROJECTS

10 62. Settling Defendants shall implement (i) the Woodland Duck Farm
11 Supplemental Environmental Project in accordance with all provisions of
12 Appendix E to this Consent Decree, which is attached hereto and incorporated into
13 this Consent Decree by reference; or (ii) an alternative Supplemental
14 Environmental Project as approved by EPA pursuant to paragraph 63. In
15 implementing the SEP, Settling Defendants shall spend not less than \$468,750 in
16 Eligible SEP Costs, as that term is defined in Section IV (Definitions) of this
17 Consent Decree. The SEP shall be completed within five years after entry of this
18 Consent Decree. The Woodland Duck Farm Supplemental Environmental Project
19 involves the redevelopment of the Woodland Duck Farm property (the "Duck
20 Farm"). The Duck Farm is a 57-acre property located along the east side of the
21 San Gabriel River just north of the confluence of the San Gabriel River and San
22 Jose Creek. The property consists of two portions: 45-acres along the west bank of
23 the San Gabriel River and 12-acres on the eastern side of the I-605 freeway. The
24 property was purchased by The Trust for Public Land ("TPL") in 2001. TPL sold
25 the property to the Watershed Conservation Authority ("WCA") in 2004. WCA
26 plans to redevelop the Duck Farm into a multi-use property for the benefit of the
27 local community. The SEP funds may be used for the following aspects of the
28 Duck Farm redevelopment:

- 1 a. phytoremediation;
- 2 b. the construction of groundwater recharge facilities;
- 3 c. wetlands habitat restoration, and
- 4 d. treatment wetlands,

5 provided, however, that the SEP funds may be spent on c. and d., above, only in
6 the event that SEP funds cannot be fully spent on projects a. and/or b.

7 63. a. Settling Defendants are responsible for the satisfactory
8 completion of the SEP in accordance with the requirements of this Consent Decree.
9 "Satisfactory completion" means that Settling Defendants shall complete the work
10 in accordance with all work plans and specifications for the project and shall spend
11 not less than \$468,750 in Eligible SEP Costs. Settling Defendants may use
12 contractors or consultants in planning and implementing the SEP.

13 b. If the Woodland Duck Farm Supplemental Environmental Project is not
14 initiated within 3 years of entry of this Consent Decree because the WCA has not
15 initiated the larger project, or if a force majeure event otherwise prevents initiation
16 or performance of the Woodland Duck Farm Supplemental Environmental Project,
17 then Settling Defendants shall propose an alternative SEP that meets the criteria of
18 EPA's May 1, 1998 Supplemental Environmental Projects Policy, as modified or
19 amended by any subsequent policy. EPA may, in its unreviewable discretion,
20 agree to extend the requirement to initiate the Woodland Duck Farm Supplemental
21 Environmental Project beyond the 3 year limit. If the Parties agree on an
22 alternative SEP, then Settling Defendants shall submit to EPA for approval an
23 alternative SEP Implementation Plan that contains milestones for the initiation and
24 completion of the alternative SEP.

25 c. If EPA, in its unreviewable discretion, does not approve an
26 alternative SEP within six months of the date Settling Defendants provide notice to
27 EPA of their desire to perform an alternative SEP, then Settling Defendants agree
28 to pay applicable Stipulated Penalties pursuant to Paragraph 85.

64. With regard to the Woodland Duck Farm Supplemental Environmental Project, Settling Defendants certify the truth and accuracy of each of the following:

a. that all cost information provided to EPA in connection with EPA's approval of the Woodland Duck Farm Supplemental Environmental Project is complete and accurate and represents a fair estimate of the costs necessary to implement the Woodland Duck Farm Supplemental Environmental Project;

b. that, as of the date of executing this Consent Decree, Settling Defendants are not required to perform or develop the Woodland Duck Farm Supplemental Environmental Project by any federal, state, or local law or regulation and are not required to perform or develop the Woodland Duck Farm Supplemental Environmental Project by agreement, grant, or as injunctive relief awarded in any other action in any forum;

c. that the Woodland Duck Farm Supplemental Environmental Project is not a project that Settling Defendants were planning or intending to construct, perform, or implement other than in settlement of the claims resolved in this Consent Decree;

d. that Settling Defendants have not received, and are not negotiating to receive, credit for the Woodland Duck Farm Supplemental Environmental Project in any other enforcement action; and

e. that Settling Defendants will not receive any reimbursement for any portion of the Woodland Duck Farm Supplemental Environmental Project from any other person.

65. SEP Completion Report. Within 60 Days after the date set for completion of the SEP, Settling Defendants shall submit a SEP Completion Report to the United States and the State, in accordance with Section XXVII of this Consent Decree (Notices and Submissions). The SEP Completion Report shall contain the following information:

- 1 a. a detailed description of the SEP as implemented;
- 2 b. a description of any problems encountered in completing the
- 3 SEP and the solutions thereto;
- 4 c. an itemized list of all Eligible SEP Costs;
- 5 d. certification that the SEP has been fully implemented pursuant
- 6 to the provisions of this Consent Decree;
- 7 e. a description of the environmental and public health benefits
- 8 resulting from implementation of the SEP (with a quantification of the benefits and
- 9 pollutant reductions, if feasible);
- 10 f. The SEP Completion Report shall be signed by a responsible
- 11 corporate official of a Settling Defendant or by the Settling Defendants' Project
- 12 Coordinator and shall bear the certification language set forth in Paragraph 51.a.

13 66. EPA may require reasonable information in addition to that described
14 above, in order to determine the adequacy of SEP completion or eligibility of SEP
15 costs, and Settling Defendants shall provide such information.

16 67. After receiving the SEP Completion Report, the United States shall
17 notify Settling Defendants whether or not Settling Defendants have satisfactorily
18 completed the SEP. If the SEP has not been satisfactorily completed in accordance
19 with all applicable work plans and schedules, or if the amount of Eligible SEP
20 Costs incurred is less than the amount set forth in Paragraph 62, above, Stipulated
21 Penalties may be assessed under Section XXI (Stipulated Penalties) of this Consent
22 Decree.

23 68. Disputes concerning the satisfactory performance of the SEP and the
24 amount of Eligible SEP Costs incurred may be resolved under Section XX of this
25 Consent Decree (Dispute Resolution). No other disputes arising under this Section
26 shall be subject to Dispute Resolution.

27 69. Each submission required under this Section shall be signed by a
28 corporate representative of the Settling Defendants with knowledge of the SEP or

1 by Settling Defendants' Project Coordinator.

2 70. Any public statement, oral or written, in print, film, or other media,
3 made by Settling Defendants making reference to the SEP under this Consent
4 Decree shall include the following language: "This project was undertaken in
5 connection with the settlement of an enforcement action, United States v. Carrier
6 Corp., taken on behalf of the U.S. Environmental Protection Agency under the
7 Comprehensive Environmental Response, Compensation, and Liability Act
8 (CERCLA or Superfund)."

9 71. Settling Defendants agree not to claim any funds expended in the
10 performance of the SEP as a deductible business expense for purposes of
11 calculating their federal and state income taxes. In addition, Settling Defendants,
12 within 30 Days of the date they submit their federal and state income taxes for the
13 calendar year in which the SEP is completed, shall submit to EPA a certification
14 that they did not deduct any of the funds expended in the SEP in calculating their
15 federal and state income taxes.

16 XIX. FORCE MAJEURE

17 72. "Force majeure," for purposes of this Consent Decree, is defined as
18 any event arising from causes beyond the control of Settling Defendants, of any
19 entity controlled by Settling Defendants, or of Settling Defendants' contractors,
20 that delays or prevents the performance of any obligation under this Consent
21 Decree despite Settling Defendants' best efforts to fulfill the obligation. The
22 requirement that Settling Defendants exercise "best efforts to fulfill the obligation"
23 includes using best efforts to anticipate any potential force majeure event and best
24 efforts to address the effects of any potential force majeure event (1) as it is
25 occurring and (2) following the potential force majeure event, such that the delay is
26 minimized to the greatest extent possible. "Force Majeure" does not include
27 financial inability to complete the Work or a failure to attain the Performance
28 Criteria.

73. If any event occurs or has occurred that may delay the performance of any obligation under this Consent Decree, whether or not caused by a force majeure event, Settling Defendants shall notify orally EPA's Project Coordinator or, in his or her absence, EPA's Alternate Project Coordinator or, in the event both of EPA's designated representatives are unavailable, the Director of the Superfund Division, EPA Region 9, within 48 hours of when Settling Defendants first knew that the event might cause a delay. Within 14 Days thereafter, Settling Defendants shall provide in writing to EPA an explanation and description of the reasons for the delay; the anticipated duration of the delay; all actions taken or to be taken to prevent or minimize the delay; a schedule for implementation of any measures to be taken to prevent or mitigate the delay or the effect of the delay; Settling Defendants' rationale for attributing such delay to a force majeure event if they intend to assert such a claim; and a statement as to whether, in the opinion of Settling Defendants, such event may cause or contribute to an endangerment to public health, welfare or the environment. Settling Defendants shall include with any notice all available documentation supporting their claim that the delay was attributable to a force majeure. Failure to comply with the above requirements shall preclude Settling Defendants from asserting any claim of force majeure for that event for the period of time of such failure to comply, and for any additional delay caused by such failure. Settling Defendants shall be deemed to know of any circumstance of which Settling Defendants, any entity controlled by Settling Defendants, or Settling Defendants' contractors knew or should have known.

74. If EPA, after a reasonable opportunity for review and comment by the State, agrees that the delay or anticipated delay is attributable to a force majeure event, the time for performance of the obligations under this Consent Decree that are affected by the force majeure event will be extended by EPA, after a reasonable opportunity for review and comment by the State, for such time as is necessary to complete those obligations. An extension of the time for performance of the

1 obligations affected by the force majeure event shall not, of itself, extend the time
2 for performance of any other obligation. If EPA, after a reasonable opportunity for
3 review and comment by the State, does not agree that the delay or anticipated delay
4 has been or will be caused by a force majeure event, EPA will notify Settling
5 Defendants in writing of its decision. If EPA, after a reasonable opportunity for
6 review and comment by the State, agrees that the delay is attributable to a force
7 majeure event, EPA will notify Settling Defendants in writing of the length of the
8 extension, if any, for performance of the obligations affected by the force majeure
9 event.

10 75. If Settling Defendants elect to invoke the dispute resolution
11 procedures set forth in Section XX (Dispute Resolution), they shall do so no later
12 than 15 Days after receipt of EPA's notice. In any such proceeding, Settling
13 Defendants shall have the burden of demonstrating by a preponderance of the
14 evidence that the delay or anticipated delay has been or will be caused by a force
15 majeure event, that the duration of the delay or the extension sought was or will be
16 warranted under the circumstances, that best efforts were exercised to avoid and
17 mitigate the effects of the delay, and that Settling Defendants complied with the
18 requirements of Paragraphs 72 and 73, above. If Settling Defendants carry this
19 burden, the delay at issue shall be deemed not to be a violation by Settling
20 Defendants of the affected obligation of this Consent Decree identified to EPA and
21 the Court.

22 XX. DISPUTE RESOLUTION

23 76. Unless otherwise expressly provided for in this Consent Decree, the
24 dispute resolution procedures of this Section shall be the exclusive mechanism to
25 resolve disputes arising under or with respect to this Consent Decree. However,
26 the procedures set forth in this Section shall not apply to actions by the United
27 States to enforce obligations of Settling Defendants that have not been disputed in
28 accordance with this Section.

1 77. Any dispute that arises under or with respect to this Consent Decree
2 shall in the first instance be the subject of informal negotiations between the
3 Parties to the dispute. The period for informal negotiations shall not exceed 20
4 Days from the time the dispute arises, unless it is modified by written agreement of
5 the Parties to the dispute. The dispute shall be considered to have arisen when one
6 Party sends the other Parties a written Notice of Dispute.

7 78. Statements of Position.

8 a. In the event that the Parties cannot resolve a dispute by
9 informal negotiations under the preceding Paragraph, then the position advanced
10 by EPA shall be considered binding unless, within 21 Days after the conclusion of
11 the informal negotiation period, Settling Defendants invoke the formal dispute
12 resolution procedures of this Section by serving on the United States a written
13 Statement of Position on the matter in dispute, including but not limited to any
14 factual data, analysis, or opinion supporting that position and any supporting
15 documentation relied upon by Settling Defendants. The Statement of Position shall
16 specify Settling Defendants' position as to whether formal dispute resolution
17 should proceed under Paragraph 79 or Paragraph 80.

18 b. Within 21 Days after receipt of Settling Defendants' Statement
19 of Position, EPA will serve on Settling Defendants its Statement of Position,
20 including, but not limited to, any factual data, analysis, or opinion supporting that
21 position and all supporting documentation relied upon by EPA. EPA's Statement
22 of Position shall include a statement as to whether formal dispute resolution should
23 proceed under Paragraph 79 or 80. Within 10 Days after receipt of EPA's
24 Statement of Position, Settling Defendants may submit a Reply.

25 c. If there is disagreement between EPA and the Settling
26 Defendants as to whether dispute resolution should proceed under Paragraph 79 or
27 80, the Parties to the dispute shall follow the procedures set forth in the Paragraph
28 determined by EPA to be applicable. However, if the Settling Defendants

ultimately appeal to the Court to resolve the dispute, the Court shall determine which Paragraph is applicable in accordance with the standards of applicability set forth in Paragraphs 79 and 80.

79. Formal dispute resolution for disputes pertaining to the selection or adequacy of any response action and all other disputes that are accorded review on the administrative record under applicable principles of administrative law shall be conducted pursuant to the procedures set forth in this Paragraph. For purposes of this Paragraph, the adequacy of any response action includes, without limitation: (1) the adequacy or appropriateness of plans, procedures to implement plans, or any other items requiring approval by EPA under this Consent Decree; and (2) the adequacy of the performance of response actions taken pursuant to this Consent Decree. Nothing in this Consent Decree shall be construed to allow any dispute by Settling Defendants regarding the validity of the Interim ROD's or the ESD's provisions.

a. An administrative record of the dispute shall be maintained by EPA and shall contain all statements of position, including supporting documentation, submitted pursuant to this Section. Where appropriate, EPA may allow submission of supplemental statements of position by the parties to the dispute.

b. The Director of the Superfund Division, EPA Region 9, will issue a final administrative decision resolving the dispute based on the administrative record described in Paragraph 79.a. This decision shall be binding upon the Settling Defendants, subject only to the right to seek judicial review pursuant to Paragraph 79.c and d.

c. Any administrative decision made by EPA pursuant to Paragraph 79.b. shall be reviewable by this Court, provided that a motion for judicial review of the decision is filed by Settling Defendants with the Court and served on all Parties within 10 Days of receipt of EPA's decision. The motion shall

1 include a description of the matter in dispute, the efforts made by the Parties to
 2 resolve it, the relief requested, and the schedule, if any, within which the dispute
 3 must be resolved to ensure orderly implementation of this Consent Decree. The
 4 United States may file a response to Settling Defendants' motion.

5 d. In proceedings on any dispute governed by this Paragraph,
 6 Settling Defendants shall have the burden of demonstrating that the decision of the
 7 Superfund Division Director is arbitrary and capricious or otherwise not in
 8 accordance with law. Judicial review of EPA's decision shall be on the
 9 administrative record compiled pursuant to Paragraph 79.a.

10 80. Formal dispute resolution for disputes that neither pertain to the
 11 selection or adequacy of any response action nor are otherwise accorded review on
 12 the administrative record under applicable principles of administrative law, shall be
 13 governed by this Paragraph.

14 a. Following receipt of Settling Defendants' Statement of Position
 15 submitted pursuant to Paragraph 78, the Director of the Superfund Division, EPA
 16 Region 9, will issue a final decision resolving the dispute. The Superfund Division
 17 Director's decision shall be binding on Settling Defendants unless, within 10 Days
 18 of receipt of the decision, Settling Defendants file with the Court and serve on the
 19 Parties a motion for judicial review of the decision, setting forth the matter in
 20 dispute, the efforts made by the Parties to resolve it, the relief requested, and the
 21 schedule, if any, within which the dispute must be resolved to ensure orderly
 22 implementation of the Consent Decree. The United States may file a response to
 23 Settling Defendants' motion.

24 b. Notwithstanding Paragraph K of Section I (Background) of this
 25 Consent Decree, judicial review of any dispute governed by this Paragraph shall be
 26 governed by applicable principles of law.

27 81. The invocation of formal dispute resolution procedures under this
 28 Section shall not extend, postpone, or affect in any way any obligation of Settling

Defendants under this Consent Decree, not directly in dispute, unless EPA or the Court agrees otherwise. Stipulated Penalties with respect to the disputed matter shall continue to accrue but payment shall be stayed pending resolution of the dispute as provided in Paragraph 91. Notwithstanding the stay of payment, Stipulated Penalties shall accrue from the first Day of noncompliance with any applicable provision of this Consent Decree. In the event that Settling Defendants do not prevail on the disputed issue, Stipulated Penalties shall be assessed and paid as provided in Section XXI (Stipulated Penalties).

XXI. STIPULATED PENALTIES

82. Settling Defendants shall be liable for stipulated penalties in the amounts set forth in Paragraphs 83, 84, and 85 to the United States for failure to comply with the requirements of this Consent Decree specified below, unless excused under Section XIX (Force Majeure). "Compliance" by Settling Defendants shall include completion of the activities under this Consent Decree or any work plan or other plan approved under this Consent Decree identified below in accordance with all applicable requirements of law, this Consent Decree, the SOW, and any plans or other documents approved by EPA pursuant to this Consent Decree and within the specified time schedules established by and approved under this Consent Decree.

83. Stipulated Penalty Amounts - Work.

a. The following Stipulated Penalties shall accrue per violation per Day for any noncompliance identified in Subparagraph 83.b:

| <u>Penalty Per Violation Per Day</u> | <u>Period of Noncompliance</u> |
|--------------------------------------|--------------------------------|
| \$1,000 | 1st through 14th Day |
| \$2,000 | 15th through 30th Day |
| \$3,000 | 31st Day and beyond |

b. Compliance Milestones. Failure to perform any of the following within the specified time schedule provided for in this Consent Decree,

1 SOW, or work plans shall result in stipulated penalties in the amounts set forth in
2 Subparagraph a.:

- 3 1. Initiation of construction of Remedial Action;
- 4 2. Completion of construction of Remedial Action;
- 5 3. Achievement of Operational and Functional Status;
- 6 4. Compliance with actions required pursuant to the SOW
7 to come back into compliance with the Performance
8 Criteria or discharge ARARs;
- 9 5. Compliance with actions required by EPA pursuant to the
10 SOW where EPA has determined it is more likely than
11 not that the Performance Criteria or discharge ARARs
12 will be exceeded if such actions are not undertaken;
- 13 6. Timely payments for Future Response Costs;
- 14 7. Timely payments for Past Response Costs; and,
- 15 8. Timely payments for civil penalties.

16 84. Stipulated Penalty Amounts - Reports.

17 a. The following Stipulated Penalties shall accrue per violation per
18 Day for any non-compliance identified in Subparagraph 84.b:

| <u>Penalty Per Violation Per Day</u> | <u>Period of Noncompliance</u> |
|--------------------------------------|--------------------------------|
| \$1,000 | 1st through 14th Day |
| \$2,000 | 15th through 30th Day |
| \$3,000 | 31st Day and beyond |

23 b. Failure to submit the following reports in a timely or adequate
24 manner as set forth in Section XI (EPA Approval of Plans and Other Submissions)
25 shall result in stipulated penalties in the amounts set forth in Subparagraph a.:

- 26 1. Draft and Final RD/RA Work Plans;
- 27 2. Preliminary Remedial Design;
- 28 3. Pre-final Remedial Design;

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4. Final Remedial Design;

5. Remedial Action Construction Complete Report; and

6. Performance Evaluation Reports

c. The following stipulated penalties shall accrue per violation per Day for failure to submit any other reports or written documents in a timely or adequate manner as set forth in Section XI (EPA Approval of Plans and Other Submissions).

| <u>Penalty Per Violation Per Day</u> | <u>Period of Noncompliance</u> |
|--------------------------------------|--------------------------------|
| \$100 | 1st through 14th Day |
| \$500 | 15th through 30th Day |
| \$1,000 | 31st Day and beyond |

85. SEP Compliance

a. If Settling Defendants spend less than the amount set forth in Paragraph 62, above, Settling Defendants shall pay a stipulated penalty equal to the difference between the amount of total Eligible SEP Costs incurred by Settling Defendants and the amount set forth in Paragraph 62.

b. If Settling Defendants have completed the SEP, but the SEP is not satisfactory, Settling Defendants shall pay \$48,000 in addition to any penalty required under Subparagraph a, above.

c. Except as provided in Subsection d, below, if the SEP is not completed, Settling Defendants shall pay a stipulated penalty of \$75,000 in addition to any penalty required under Subparagraph a, above, and any penalties owing under Subparagraph e, below, for milestones missed up to the time that the penalty under this Subparagraph accrues. The penalty under this Subparagraph shall accrue as of the date specified for completing the SEP or the date performance ceases, whichever is earlier. Upon payment of the penalty under this Subparagraph, penalties under Subparagraph e will no longer continue to accrue.

d. If the SEP is not completed but Settling Defendants: (i) made

1 good faith efforts to complete the SEP in accordance with all work plans and
 2 specifications for the SEP; and (ii) certify, with supporting documentation, that
 3 they spent at least 90 percent of the amount set forth in Paragraph 62, above,
 4 Settling Defendants shall only be liable for stipulated penalties as set forth in
 5 Subsection a, above, and any penalties owing under Subparagraph e, below, for
 6 milestones missed up to the time that the penalty under this Subparagraph accrues.
 7 The penalty under this Subparagraph shall accrue as of the date specified for
 8 completing the SEP or the date performance ceases, whichever is earlier.

9 e. If Settling Defendants fail to comply with the schedule in
 10 Section XVIII (Supplemental Environmental Projects) of this Consent Decree or in
 11 the SEP Implementation Plan, Settling Defendants shall pay Stipulated Penalties
 12 for each failure to meet an applicable milestone, as follows:

| <u>Penalty Per Violation Per Day</u> | <u>Period of Noncompliance</u> |
|--------------------------------------|--------------------------------|
| \$100 | 1st through 14th Day |
| \$500 | 15th through 30th Day |
| \$1,000 | 31st Day and beyond |

17 Subject to Paragraph 85.c and d, above, such penalties shall accrue from the date
 18 Settling Defendants was required to meet each such milestone, until compliance
 19 with the milestone is achieved.

20 86. In the event that EPA assumes performance of a portion or all of the
 21 Work pursuant to Paragraph 99 of Section XXII (Covenants Not to Sue by
 22 Plaintiff), Settling Defendants shall be liable for a stipulated penalty in the amount
 23 of \$2 million.

24 87. All penalties shall begin to accrue on the Day after the complete
 25 performance is due or the Day a violation occurs, and shall continue to accrue
 26 through the final Day of the correction of the noncompliance or completion of the
 27 activity. However, Stipulated Penalties shall not accrue: (1) with respect to a
 28 deficient submission under Section XI (EPA Approval of Plans and Other

1 Submissions), during the period, if any, beginning on the 31st Day after EPA's
 2 receipt of such submission until the date that EPA notifies Settling Defendants of
 3 any deficiency; (2) with respect to a decision by the Director of the Superfund
 4 Division, EPA Region 9, under Paragraph 79.b or 80.a of Section XX (Dispute
 5 Resolution), during the period, if any, beginning on the 21st Day after the date that
 6 Settling Defendants' reply to EPA's Statement of Position is received until the date
 7 that the Director issues a final decision regarding such dispute; or (3) with respect
 8 to judicial review by this Court of any dispute under Section XX (Dispute
 9 Resolution), during the period, if any, beginning on the 31st Day after the Court's
 10 receipt of the final submission regarding the dispute until the date that the Court
 11 issues a final decision regarding such dispute, whichever occurs later. Nothing
 12 herein shall prevent the simultaneous accrual of separate penalties for separate
 13 violations of this Consent Decree.

14 88. Following a determination by EPA that Settling Defendants have
 15 failed to comply with a requirement of this Consent Decree, EPA may give Settling
 16 Defendants written notification of the same and describe the noncompliance. EPA
 17 may send the Settling Defendants a written demand for the payment of the
 18 penalties. However, penalties shall accrue as provided in the preceding Paragraph
 19 regardless of whether EPA has notified Settling Defendants of a violation.

20 89. All penalties accruing under this Section shall be due and payable
 21 within 30 Days of Settling Defendants' receipt from EPA of a written demand for
 22 payment of the penalties, unless Settling Defendants invoke the dispute resolution
 23 procedures under Section XX (Dispute Resolution). All payments to the United
 24 States under this Section shall be paid by FedWire EFT pursuant to the instructions
 25 set forth in Paragraph 54.b, or by certified check(s) or cashier's check(s) made
 26 payable to "EPA Hazardous Substances Superfund." Checks shall be mailed to:

27 EPA – Cincinnati Accounting Operations
 28 Attn: Region 9 Superfund Receivables
 P.O. Box 371099M
 Pittsburgh, PA 15251

1 and shall indicate that the payment is for stipulated penalties, and shall reference
2 the EPA Region and Site/Spill ID # 098V, the DOJ Case Number 90-11-2-354/15,
3 the civil action number of this case, and the name and address of the Party making
4 payment. Copies of check(s) paid pursuant to this Section, and any accompanying
5 transmittal letter(s), shall be sent to the United States as provided in Section XXVII
6 (Notices and Submissions).

7 90. The payment of penalties shall not alter in any way Settling
8 Defendants' obligation to complete the performance of the Work required under
9 this Consent Decree.

10 91. Stipulated Penalties shall continue to accrue as provided in
11 Paragraph 87 during any dispute resolution period, but need not be paid until the
12 following:

13 a. If the dispute is resolved by agreement or by a decision of EPA
14 that is not appealed to this Court, accrued penalties determined to be owing shall
15 be paid within 15 Days of the agreement or the receipt of EPA's decision or order;

16 b. If the dispute is appealed to this Court and the United States
17 prevails in whole or in part, Settling Defendants shall pay all accrued penalties
18 determined by the Court to be owed to EPA within 60 Days of receipt of the
19 Court's decision or order, except as provided in Subparagraph c below;

20 c. If the District Court's decision is appealed by any Party, Settling
21 Defendants shall pay all accrued penalties determined by the District Court to be
22 owing to the United States into an interest-bearing escrow account within 60 Days
23 of receipt of the Court's decision or order. Penalties shall be paid into this account
24 as they continue to accrue, at least every 60 Days. Within 15 Days of receipt of the
25 final appellate court decision, the escrow agent shall pay the balance of the account
26 to EPA or to Settling Defendants in accordance with the Court's mandate.

27 92. If Settling Defendants fail to pay Stipulated Penalties when due, the
28 United States may institute proceedings to collect the penalties, as well as Interest.

1 Settling Defendants shall pay Interest on the unpaid balance, which shall begin to
2 accrue on the date of demand made pursuant to Paragraph 89.

3 93. Nothing in this Consent Decree shall be construed as prohibiting,
4 altering, or in any way limiting the ability of the United States to seek any other
5 remedies or sanctions available by virtue of Settling Defendants' violation of this
6 Decree or of the statutes and regulations upon which it is based, including but not
7 limited to penalties pursuant to Section 122(l) of CERCLA; provided, however,
8 that the United States shall not seek civil penalties pursuant to Section 122(l) of
9 CERCLA for any violation for which a stipulated penalty is provided herein,
10 except in the case of a willful violation of the Consent Decree.

11 94. Notwithstanding any other provision of this Section, the United States
12 may, in its unreviewable discretion, waive any portion of Stipulated Penalties that
13 have accrued pursuant to this Consent Decree.

14 XXII. COVENANTS NOT TO SUE BY PLAINTIFF

15 95. In consideration of the actions that will be performed and the
16 payments that will be made by Settling Defendants under the terms of this Consent
17 Decree, and except as specifically provided in Paragraphs 96, and 98 of this
18 Section, the United States covenants not to sue or to take administrative action
19 against Settling Defendants:

20 a. pursuant to Sections 106 and 107(a) of CERCLA, 42 U.S.C. §§
21 9606, 9607(a), and Section 7003 of RCRA, 42 U.S.C. § 6973, for claims relating to
22 the Interim ROD for the Site, as modified by the ESD, and for recovery of Past
23 Response Costs and Future Response Costs;

24 b. pursuant to Section 106(b) of CERCLA, 42 U.S.C. § 9606(b),
25 to obtain penalties for failure to comply with the terms of UAO Docket No. 2001-
26 20; and

27 c. pursuant to Section 107(c)(3) of CERCLA, 42 U.S.C. §
28 9607(c)(3), to obtain punitive damages for failure to comply with the terms of

1 UAO Docket No. 2001-20.

2 Except with respect to future liability, these covenants not to sue shall take effect
3 upon the receipt by EPA of the payments required by Paragraph 54.a of Section
4 XVI (Payments for Response Costs and Civil Penalties). With respect to future
5 liability, these covenants not to sue shall take effect upon Certification of
6 Completion of Remedial Action by EPA pursuant to Paragraph 51.b of Section
7 XIV (Certification of Completion). These covenants not to sue are conditioned
8 upon the satisfactory performance by Settling Defendants of their obligations
9 under this Consent Decree. These covenants not to sue extend only to the Settling
10 Defendants and do not extend to any other person.

11 96. United States' Pre-certification Reservations. Notwithstanding any
12 other provision of this Consent Decree, the United States reserves, and this
13 Consent Decree is without prejudice to, the right to institute proceedings in this
14 action or in a new action, or to issue an administrative order seeking to compel
15 Settling Defendants

16 a. to perform further response actions relating to the shallow zone
17 remedy north of Puente Creek at the Site or Mid-Valley
18 Monitoring; or

19 b. to reimburse the United States for additional costs of response
20 for the shallow zone remedy north of Puente Creek at the Site
21 or Mid-Valley Monitoring,

22 if, prior to Certification of Completion of the Remedial Action:

23 a. conditions at the Site, previously unknown to EPA, are
24 discovered, or

25 b. information, previously unknown to EPA, is received, in whole
26 or in part,

27 and EPA determines that these previously unknown conditions or information,
28 together with any other relevant information, indicates that the Remedial Action is

1 not protective of human health or the environment.

2 97. For purposes of Paragraph 96, the information and the conditions
3 known to EPA shall include only that information known to EPA as of the date this
4 Consent Decree is lodged with the Court, and those conditions which are set forth
5 in the Interim ROD, as modified by the ESD, and the administrative record
6 supporting the Interim ROD and the ESD .

7 98. General reservations of rights. The United States reserves, and this
8 Consent Decree is without prejudice to, all rights against Settling Defendants with
9 respect to all matters not expressly included within Plaintiff's covenant not to sue.
10 Notwithstanding any other provision of this Consent Decree, the United States
11 reserves all rights against Settling Defendants with respect to:

- 12 a. claims based on a failure by Settling Defendants to meet a
13 requirement of this Consent Decree;
- 14 b. liability arising from the past, present, or future disposal,
15 release, or threat of release of Waste Material outside of the Site;
- 16 c. liability based upon Settling Defendants' transportation,
17 treatment, storage, or disposal, or the arrangement for the transportation, treatment,
18 storage, or disposal of Waste Material at or in connection with the Site, other than
19 as provided in the Interim ROD as modified by the ESD, the Work, or otherwise
20 ordered by EPA, after signature of this Consent Decree by Settling Defendants;
- 21 d. liability for damages for injury to, destruction of, or loss of
22 natural resources, and for the costs of any natural resource damage assessments;
- 23 e. criminal liability;
- 24 f. liability for violations of federal or state law which occur
25 during or after implementation of the Remedial Action;
- 26 g. liability, prior to Certification of Completion of the Remedial
27 Action, for additional response actions that EPA determines are necessary to
28 achieve the Performance Criteria, but that cannot be required pursuant to

1 Paragraph 13 (Modification of the SOW or Related Work Plans);

2 h. liability for any other operable units of the San Gabriel Valley
3 Superfund Site; and

4 i. liability for any response actions at the Site that occur after the
5 later of (i) the date 8 years from the Operational and Functional Date, or (ii) the
6 date of issuance of a final Record of Decision for the Site.

7 99. Work Takeover. In the event EPA determines that Settling
8 Defendants have ceased implementation of any portion of the Work, are seriously
9 or repeatedly deficient or late in their performance of the Work, or are
10 implementing the Work in a manner that may cause an endangerment to human
11 health or the environment, EPA may assume the performance of all or any portions
12 of the Work as EPA determines necessary. Settling Defendants may invoke the
13 procedures set forth in Section XX (Dispute Resolution), Paragraph 79, to dispute
14 EPA's determination that takeover of the Work is warranted under this Paragraph.
15 Costs incurred by the United States in performing the Work pursuant to this
16 Paragraph during the period 8 years from the Operational and Functional Date,
17 shall be considered Future Response Costs that Settling Defendants shall pay
18 pursuant to Section XVI (Payments for Response Costs and Civil Penalties).

19 100. Notwithstanding any other provision of this Consent Decree, the
20 United States retains all authority and reserve all rights to take any and all response
21 actions authorized by law.

22 XXIII. COVENANTS BY SETTLING DEFENDANTS

23 101. Covenant Not to Sue. Subject to the reservations in Paragraph 102,
24 Settling Defendants hereby covenant not to sue and agree not to assert any claims
25 or causes of action against the United States relating to the Interim ROD, as
26 modified by the ESD, past response actions, Past Response Costs, Future Response
27 Costs, or this Consent Decree, including, but not limited to:

28 a. any direct or indirect claim for reimbursement from the

1 Hazardous Substance Superfund (established pursuant to the Internal Revenue
2 Code, 26 U.S.C. § 9507) through CERCLA Sections 106(b)(2), 107, 111, 112, 113,
3 42 U.S.C. §§ 9606(b)(2), 9607, 9611, 9612, 9613, or any other provision of law;

4 b. any claims against the United States, including any department,
5 agency or instrumentality of the United States under CERCLA Sections 107 or 113
6 related to the Site;

7 c. any claims arising out of response actions at or in connection
8 with the Site, including any claim under the United States Constitution; the
9 California Constitution; the Tucker Act, 28 U.S.C. § 1491; the Equal Access to
10 Justice Act, 28 U.S.C. § 2412, as amended; or at common law; or

11 d. any direct or indirect claim for disbursement from the Puente
12 Valley Operable Unit Special Account.

13 Except as provided in Paragraph 109 (Waiver of Claim-Splitting Defenses),
14 these covenants not to sue shall not apply in the event that the United States brings
15 a cause of action or issues an order pursuant to the reservations set forth in
16 Paragraphs 96, 98 (b) - (d) or 98 (g) - (i); but only to the extent that Settling
17 Defendants' claims arise from the same response action, response costs, or
18 damages that the United States is seeking pursuant to the applicable reservation.

19 102. Settling Defendants reserve, and this Consent Decree is without
20 prejudice to, claims against the United States, subject to the provisions of Chapter
21 171 of Title 28 of the United States Code, for money damages for injury or loss of
22 property or personal injury or death caused by the negligent or wrongful act or
23 omission of any employee of the United States while acting within the scope of his
24 office or employment under circumstances where the United States, if a private
25 person, would be liable to the claimant in accordance with the law of the place
26 where the act or omission occurred. However, any such claim shall not include a
27 claim for any damages caused, in whole or in part, by the act or omission of any
28 person, including any contractor, who is not a federal employee as that term is

defined in 28 U.S.C. § 2671; nor shall any such claim include a claim based on EPA's selection of response actions, or the oversight or approval of the Settling Defendants' plans or activities. The foregoing applies only to claims which are brought pursuant to any statute other than CERCLA and for which the waiver of sovereign immunity is found in a statute other than CERCLA. The covenant in Paragraph 101 shall not extend to any claims relating to any response actions at the Site that occur after the later of (i) the date 8 years from the Operational and Functional Date, or (ii) the date of issuance of a final Record of Decision for the Site.

103. Nothing in this Consent Decree shall be deemed to constitute preauthorization of a claim within the meaning of Section 111 of CERCLA, 42 U.S.C. § 9611, or 40 C.F.R. § 300.700(d).

104. Settling Defendants agree to forbear from filing suit for contribution against the Parties listed in Appendix G for liabilities associated with the Interim ROD, as modified by the ESD, provided that (i) those parties resolve their respective liabilities for the Interim ROD, as modified by the ESD, through entry of Consent Decrees with the United States by May 31, 2008; and (ii) those parties do not file suit for contribution against the Settling Defendants for liabilities associated with the Interim ROD, as modified by the ESD. For purposes of this provision, the parties listed in Appendix H are deemed by the Parties to have resolved their respective liabilities for the Interim ROD, as modified by the ESD, by virtue of entry, on September 8, 2005, of a Consent Decree in the matter of United States v. Acorn Engineering Company et al., Civil Action No. 03-5470-ABC (FMOx)(C.D.Cal.).

XXIV. EFFECT OF SETTLEMENT; CONTRIBUTION PROTECTION

105. Except as provided in Paragraph 104 regarding the parties in Appendix G, nothing in this Consent Decree shall be construed to create any rights in, or grant any cause of action to, any person not a Party to this Consent Decree.

1 The preceding sentence shall not be construed to waive or nullify any rights that
2 any person not a signatory to this decree may have under applicable law. Each of
3 the Parties expressly reserves any and all rights (including, but not limited to, any
4 right to contribution), defenses, claims, demands, and causes of action that each
5 Party may have with respect to any matter, transaction, or occurrence relating in
6 any way to the Site against any person not a Party hereto.

7 106. The Parties agree, and by entering this Consent Decree this Court
8 finds, that the Settling Defendants are entitled, as of the Effective Date, to
9 protection from contribution actions or claims as provided by CERCLA Section
10 113(f)(2), 42 U.S.C. § 9613(f)(2) for matters addressed in this Consent Decree.
11 The "matters addressed" in this Consent Decree are Past Response Costs; Future
12 Response Costs; all Work required by this Consent Decree and the SOW; and all
13 other costs incurred by any person related to the Interim ROD, as modified by the
14 ESD.

15 107. Settling Defendants agree that with respect to any suit or claim for
16 contribution brought by them for matters related to this Consent Decree they will
17 notify the United States in writing no later than 60 Days prior to the initiation of
18 such suit or claim.

19 108. Settling Defendants also agree that with respect to any suit or claim
20 for contribution brought against them for matters related to this Consent Decree
21 they will notify in writing the United States within 10 Days of service of the
22 complaint on them. In addition, Settling Defendants shall notify the United States
23 within 10 Days of service or receipt of any Motion for Summary Judgment and
24 within 10 Days of receipt of any order from a court setting a case for trial.

25 109. In any subsequent administrative or judicial proceeding initiated by
26 any Party for injunctive relief, recovery of response costs, or other appropriate
27 relief relating to the Site, the Parties shall not assert, and may not maintain, any
28 defense or claim based upon the principles of waiver, res judicata, collateral

1 estoppel, issue preclusion, claim-splitting, or other defenses based upon any
 2 contention that the claims raised in the subsequent proceeding were or should have
 3 been brought in the instant case; provided, however, that nothing in this Paragraph
 4 affects the enforceability of the covenants not to sue set forth in Section XXII
 5 (Covenants Not to Sue by Plaintiff) or in Section XXIII (Covenants by Settling
 6 Defendants).

7 XXV. ACCESS TO INFORMATION

8 110. Settling Defendants shall provide to EPA, upon request, copies of all
 9 documents and information within their possession or control or that of their
 10 contractors or agents relating to activities at the Site or to the implementation of
 11 this Consent Decree, including, but not limited to, sampling, analysis, chain of
 12 custody records, manifests, trucking logs, receipts, reports, sample traffic routing,
 13 correspondence, or other documents or information related to the Work. Settling
 14 Defendants shall also make available to EPA, for purposes of investigation,
 15 information gathering, or testimony, their employees, agents, or representatives
 16 with knowledge of relevant facts concerning the performance of the Work.

17 111. Business Confidential and Privileged Documents.

18 a. Settling Defendants may assert business confidentiality claims
 19 covering part or all of the documents or information submitted to Plaintiff under
 20 this Consent Decree to the extent permitted by and in accordance with Section
 21 104(e)(7) of CERCLA, 42 U.S.C. § 9604(e)(7), and 40 C.F.R. § 2.203(b).
 22 Documents or information determined to be confidential by EPA will be afforded
 23 the protection specified in 40 C.F.R. Part 2, Subpart B. If no claim of
 24 confidentiality accompanies documents or information when they are submitted to
 25 EPA, or if EPA has notified Settling Defendants that the documents or information
 26 are not confidential under the standards of Section 104(e)(7) of CERCLA or 40
 27 C.F.R. Part 2, Subpart B, the public may be given access to such documents or
 28 information without further notice to Settling Defendants.

1 b. The Settling Defendants may assert that certain documents,
2 records and other information are privileged under the attorney-client privilege, or
3 any other privilege recognized by federal or California law. If Settling Defendants
4 assert such a privilege in lieu of providing documents, they shall provide the
5 Plaintiff with the following: (1) the title of the document, record, or information;
6 (2) the date of the document, record, or information; (3) the name and title of the
7 author of the document, record, or information; (4) the name and title of each
8 addressee and recipient; (5) a description of the contents of the document, record,
9 or information; and (6) the privilege asserted by Settling Defendants. However, no
10 documents, reports or other information created or generated pursuant to the
11 requirements of the Consent Decree shall be withheld on the grounds that they are
12 privileged.

13 112. No claim of confidentiality shall be made with respect to any data,
14 including but not limited to all sampling, analytical, monitoring, hydrogeologic,
15 scientific, chemical, or engineering data, or any other documents or information
16 evidencing conditions at or around the Site.

17 XXVI. RETENTION OF RECORDS

18 113. Until 6 years after the Settling Defendants' receipt of EPA's
19 notification pursuant to Paragraph 51.b of Section XIV (Certification of
20 Completion), each Settling Defendant shall preserve and retain all non-identical
21 copies of records and documents (including records or documents in electronic
22 form) now in its possession or control or which come into its possession or control
23 that relate in any manner to its liability under CERCLA with respect to the Site,
24 provided, however, that Settling Defendants who are potentially liable as owners or
25 operators of the Site must retain, in addition, all documents and records that relate
26 to the liability of any other person under CERCLA with respect to the Site. Each
27 Settling Defendant must also retain, and instruct its contractors and agents to
28 preserve, for the same period of time specified above, all non-identical copies of

1 the last draft or final version of any documents or records (including documents or
2 records in electronic form) now in its possession or control or which come into its
3 possession or control that relate in any manner to the performance of the Work;
4 provided, however, that each Settling Defendant (and its contractors and agents)
5 must retain, in addition, copies of all data generated during the performance of the
6 Work and not contained in the aforementioned documents required to be retained.
7 Each of the above record retention requirements shall apply regardless of any
8 corporate retention policy to the contrary.

9 114. At the conclusion of this document retention period, Settling
10 Defendants shall notify the United States at least 90 Days prior to the destruction
11 of any such records or documents, and, upon request by the United States, Settling
12 Defendants shall deliver any such records or documents to EPA. Settling
13 Defendants may assert that certain documents, records and other information are
14 privileged under the attorney-client privilege or any other privilege recognized by
15 federal law. If Settling Defendants assert such a privilege, they shall provide EPA
16 with the following: (1) the title of the document, record, or information; (2) the
17 date of the document, record, or information; (3) the name and title of the author of
18 the document, record, or information; (4) the name and title of each addressee and
19 recipient; (5) a description of the subject of the document, record, or information;
20 and (6) the privilege asserted by Settling Defendants. However, no documents,
21 reports or other information created or generated pursuant to the requirements of
22 the Consent Decree shall be withheld on the grounds that they are privileged.

23 115. Each Settling Defendant hereby certifies individually that, to the best
24 of its knowledge and belief, after thorough inquiry, it has not altered, mutilated,
25 discarded, destroyed or otherwise disposed of any records, documents, or other
26 information (other than identical copies) relating to its potential liability regarding
27 the Site since notification of potential liability by the United States or DTSC or the
28 filing of suit against it regarding the Site and that it has fully complied with any

1 and all EPA requests for information pursuant to Section 104(e) and 122(e) of
 2 CERCLA, 42 U.S.C. 9604(e), 9622(e), and Section 3007 of RCRA, 42 U.S.C.
 3 6927.

4 XXVII. NOTICES AND SUBMISSIONS

5 116. Whenever under the terms of this Consent Decree written notice is
 6 required to be given or a report or other document is required to be sent by one
 7 Party to another, it shall be directed to the individuals at the addresses specified
 8 below, unless those individuals or their successors give notice of a change to the
 9 other Parties in writing. All notices and submissions shall be considered effective
 10 upon receipt, unless otherwise provided. Written notice as specified herein shall
 11 constitute complete satisfaction of any written notice requirement of the Consent
 12 Decree with respect to the United States, EPA, and the Settling Defendants,
 13 respectively.

14 As to the United States:

Chief, Environmental Enforcement Section
 Environment and Natural Resources Division
 U.S. Department of Justice
 P.O. Box 7611 Att: Elizabeth F. Kroop
 Washington, D.C. 20044-7611
 Re: DJ # 90-11-2-354/15

Matthew A. Fogelson
 Environmental Enforcement Section
 Environment and Natural Resources Division
 U.S. Department of Justice
 301 Howard Street, Suite 1050
 San Francisco, CA 94105

21 As to EPA:

Dana Barton
 EPA Project Manager
 United States Environmental Protection Agency
 Region 9
 75 Hawthorne Street
 San Francisco, CA 94105

25 As to the Regional Accounting Contact:

David Wood, PMD-6
 Section Chief
 Superfund Accounting Program
 Policy and Management Division
 75 Hawthorne Street
 San Francisco, CA 94105

28 As to Settling Defendants:

William Leikin
 Assistant General Counsel

United Technologies Corp.
One Financial Plaza, MS 524
Hartford, CT 06101
Paul Dinardo
United Technologies Corp.
4195 Saddle Lane
West Bloomfield, MI 48322

SCANNED

XXVIII. EFFECTIVE DATE

117. The effective date of this Consent Decree shall be the date upon which this Consent Decree is entered by the Court, except as otherwise provided herein.

XXIX. RETENTION OF JURISDICTION

118. This Court retains jurisdiction over both the subject matter of this action and Consent Decree and the Parties for the duration of the performance of the terms and provisions of this Consent Decree for the purpose of enabling any of the Parties to apply to the Court at any time for such further order, direction, and relief as may be necessary or appropriate for the construction or modification of this Consent Decree, or to effectuate or enforce compliance with its terms, or to resolve disputes in accordance with Section XX (Dispute Resolution) hereof or for any other purpose as may be just and proper.

XXX. APPENDICES

119. The following appendices are attached to and incorporated into this Consent Decree:

“Appendix A” is the Interim ROD.

“Appendix B” is the ESD.

“Appendix C” is a map of the Site.

“Appendix D” is the SOW.

“Appendix E” is the SEP Implementation Plan for the Woodland Duck Farm Supplemental Environmental Project.

“Appendix F” is a draft easement.

“Appendix G” is the list of parties referenced in Paragraph 104.

“Appendix H” is the list of parties referenced in Paragraph 104.

XXXI. COMMUNITY RELATIONS

120. Settling Defendants agree to participate in the community relations plan to be developed by EPA. Settling Defendants shall also cooperate with EPA in providing information regarding the Work to the public. As requested by EPA, Settling Defendants shall participate in the preparation of such information for dissemination to the public and in public meetings which may be held or sponsored by EPA to explain activities at or relating to the Site.

XXXII. MODIFICATION

121. Schedules specified in this Consent Decree for completion of the Work or the SEP may be modified by agreement of EPA and Settling Defendants. All such modifications shall be made in writing.

122. Except as provided in Paragraph 13 (Modification of the SOW or Related Work Plans), no material modifications shall be made to the SOW without written notification to and written approval of the United States, Settling Defendants, and the Court, if such modifications fundamentally alter the basic features of the selected remedy within the meaning of 40 C.F.R. § 300.435(c)(2)(B)(ii). Prior to providing its approval to any modification, the United States will provide DTSC with a reasonable opportunity to review and comment on the proposed modification. Modifications to the SOW that do not materially alter that document, or material modifications to the SOW that do not fundamentally alter the basic features of the selected remedy within the meaning of 40 C.F.R. § 300.435(c)(2)(B)(ii), may be made by written agreement between EPA, after providing DTSC with a reasonable opportunity to review and comment on the proposed modification, and Settling Defendants.

123. Nothing in this Decree shall be deemed to alter the Court's power to enforce, supervise or approve modifications to this Consent Decree.

1 XXXIII. LODGING, OPPORTUNITY FOR PUBLIC COMMENT

2 124. This Consent Decree shall be lodged with the Court for a period of not
3 less than thirty (30) Days for public notice and comment in accordance with
4 Section 122(d)(2) of CERCLA, 42 U.S.C. § 9622(d)(2), and 28 C.F.R. § 50.7. The
5 United States reserves the right to withdraw or withhold its consent if the
6 comments regarding the Consent Decree disclose facts or considerations which
7 indicate that the Consent Decree is inappropriate, improper, or inadequate. Settling
8 Defendants consent to the entry of this Consent Decree without further notice.

9 125. If for any reason the Court should decline to approve this Consent
10 Decree in the form presented, this agreement is voidable at the sole discretion of
11 any Party and the terms of the agreement may not be used as evidence in any
12 litigation between the Parties. However, the Parties' obligations pursuant to
13 Section XXXV (Withdrawal of Response to Comments, Dismissal of Appeal, and
14 Revocation of UAO) shall not be affected should the Court decline to approve this
15 Consent Decree.

16 XXXIV. SIGNATORIES/SERVICE

17 126. Each undersigned representative of a Settling Defendant to this
18 Consent Decree and the Assistant Attorney General for the Environment and
19 Natural Resources Division of the Department of Justice certifies that they are fully
20 authorized to enter into the terms and conditions of this Consent Decree and to
21 execute and legally bind the Party they represent to this document.

22 127. Each Settling Defendant hereby agrees not to oppose entry of this
23 Consent Decree by this Court or to challenge any provision of this Consent Decree
24 unless the United States has notified Settling Defendants in writing that it no
25 longer supports entry of the Consent Decree.

26 128. Each Settling Defendant shall identify, on the attached signature page,
27 the name, title, address and telephone number of an agent who is authorized to
28 accept service of process by mail on its behalf with respect to all matters arising

1 under or relating to this Consent Decree. Settling Defendants hereby agree to
 2 accept service in that manner and to waive the formal service requirements set
 3 forth in Rule 4 of the Federal Rules of Civil Procedure and any applicable local
 4 rules of this Court, including but not limited to service of a summons. The Parties
 5 agree that Settling Defendants need not file an answer to the complaint in this
 6 action unless or until the court expressly declines to enter this Consent Decree.

7 XXXV. WITHDRAWAL OF COMMENTS, DISMISSAL OF APPEAL,
 8 AND REVOCATION OF UAO

9 129. Upon lodging of this Consent Decree, Carrier Corporation agrees not
 10 to contest entry of the consent decree lodged in the related case, United States v.
 11 Acorn Engineering, et. al., Civ. Action No. 03-5470-ABC (FMOx) (hereinafter
 12 "Acorn Decree"). Furthermore, upon lodging of this Consent Decree, Carrier
 13 Corporation shall withdraw comments it submitted relating to the Acorn Decree.

14 130. Carrier Corporation filed a Motion to Intervene, opposing, among
 15 other things, entry of the Acorn Decree. Carrier Corporation's Motion to Intervene
 16 was denied in a March 19, 2004 decision by the District Court, Central District of
 17 California. Order Denying Carrier Corporation's Motion to Intervene, 221 F.R.D.
 18 530 (C.D. Cal 2004). Carrier appealed the denial of its Motion to Intervene to the
 19 Ninth Circuit. Carrier's Ninth Circuit appeal is currently stayed. Within 7 Days
 20 after the lodging of this Consent Decree, Carrier shall dismiss with prejudice its
 21 appeal of the Order Denying Carrier Corporation's Motion to Intervene, Ninth
 22 Circuit Court of Appeals Docket No. 04-55622.

23 131. On or about September 13, 2001, EPA issued Carrier Corporation
 24 UAO Docket No. 2001-20, which requires Carrier Corporation, among other
 25 things, to perform the interim remedial design and remedial action for the shallow
 26 groundwater zone at the Site pursuant to the Interim ROD. EPA shall revoke
 27 UAO Docket No. 2001-20 within two weeks after Carrier Corporation (i)
 28 withdraws its comments and any objections it may have with respect to the entry of

1 the Acorn Decree, and (ii) dismisses with prejudice its appeal of the Order Denying
2 Carrier Corporation's Motion to Intervene, 221 F.R.D. 530 (C.D. Cal. 2004).
3 However, if the Court declines to enter the Consent Decree, or the United States
4 withdraws or withholds its consent to the Consent Decree because comments
5 received disclose facts or considerations which indicate that the Consent Decree is
6 inappropriate, improper, or inadequate, then EPA reserves all of its rights against
7 Settling Defendants, including, but not limited to, the right to issue a new UAO.

8 XXXVI. FINAL JUDGMENT

9 132. This Consent Decree and its appendices constitute the final, complete,
10 and exclusive agreement and understanding among the Parties with respect to the
11 settlement embodied in the Consent Decree. The Parties acknowledge that there
12 are no representations, agreements or understandings relating to the settlement
13 other than those expressly contained in this Consent Decree.

14 133. Upon approval and entry of this Consent Decree by the Court, this
15 Consent Decree shall constitute a final judgment between the United States and
16 Settling Defendants. The Court finds that there is no just reason for delay and
17 therefore enters this judgment as a final judgment under Fed. R. Civ. P. 54 and 58.


18
19
20 SO ORDERED THIS 25 DAY OF April, 2006

21
22 Quay B. Collins
23 United States District Judge
24
25
26
27
28

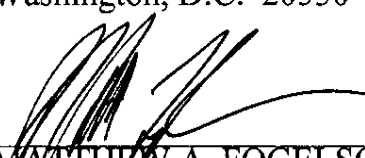
1 THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v.
2 Carrier Corporation, relating to the Puente Valley Operable Unit of the San Gabriel Valley
3 Superfund Sites.

4 **FOR THE UNITED STATES OF AMERICA:**
5 U.S. Department of Justice

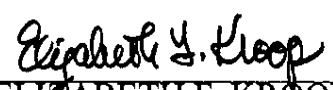
6 4/11/06
7 Date


8 SUE ELLEN WOOLDRIDGE
9 Assistant Attorney General
10 Environment and Natural Resources
11 Division
12 U.S. Department of Justice
13 Washington, D.C. 20530

14 4/18/06
15 Date


16 MATTHEW A. FOGELSON
17 Trial Attorney
18 Environmental Enforcement Section
19 Environment and Natural Resources
20 Division
21 U.S. Department of Justice
22 301 Howard Street, Suite 1050
23 San Francisco, CA 94105
24 Tel: 415-744-6470
25 Fax: 415-744-6476


26 4/13/06
27 Date


28 ELIZABETH F. KROOP
Trial Attorney
Environmental Enforcement Section
Environment and Natural Resources
Division
U.S. Department of Justice
P.O. Box 7611
Washington, DC 20044
Tel: 202-514-5244
Fax: 202-514-2583

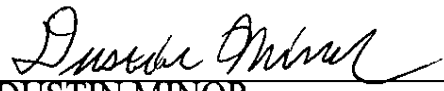
1 THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v.
2 Carrier Corporation, relating to the Puente Valley Operable Unit of the San Gabriel Valley
3 Superfund Sites.

4 **FOR THE UNITED STATES OF AMERICA:**
5 U.S. Environmental Protection Agency

6 4/27/06
7 Date

8 
9 **KEITH TAKATA**
10 Director of the Superfund Division
11 U.S. Environmental Protection Agency
12 Region 9
13 75 Hawthorne Street
14 San Francisco, CA 94105

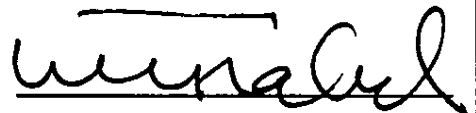
11 April 4, 2006
12 Date

13 
14 **DUSTIN MINOR**
15 Senior Counsel
16 Office of Regional Counsel
17 U.S. Environmental Protection Agency
18 Region 9
19 75 Hawthorne Street
20 San Francisco, CA 94105
21
22
23
24
25
26
27
28

1 THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v.
2 Carrier Corporation, relating to the Puente Valley Operable Unit of the San Gabriel Valley
3 Superfund Sites.

4 **FOR UNITED TECHNOLOGIES CORPORATION:**

5
6
7 DATE: March 28, 2006

Signature: 

8
9 Name: William H. Trachsel

10 Title: Senior Vice President and General Counsel
United Technologies Corp.

11 Address: One Financial Plaza, MS 524
12 Hartford, CT 06101

13 Agent Authorized to Accept Service on Behalf of Above-signed Party

14 Name (Print): William F. Leikin

Assistant

15 Title: Assistant General Counsel
United Technologies Corporation

16 Address: One Financial Plaza, MS 524

17 Hartford, CT 06101

18
19 Phone Number: (860) 728-6430

1 THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v.
2 Carrier Corporation, relating to the Puente Valley Operable Unit of the San Gabriel Valley
3 Superfund Sites.

4 **FOR CARRIER CORPORATION:**

5 DATE: March 28, 2006

Signature: William Leikin

6 Name: WILLIAM LEIKIN

7 Title: Attorney-in-Fact
8 Carrier Corporation

9 Address: One Financial Plaza, MS 524
Hartford, CT 06101

10 Agent Authorized to Accept Service on Behalf of Above-signed Party

11 Name (Print): William F. Leikin

12 Title: Assistant General Counsel

13 Address: United Technologies Corporation

14 One Financial Plaza, MS 524

15 Hartford, CT 06101

16 Phone Number: (860) 728-6430



SCANNED

Appendix A to Consent Decree

United States v. Carrier Corp. (C.D. Cal.)

SCANNED

Interim ROD

SFUND RECORDS CTR
40106

SCANNED

INTERIM RECORD OF DECISION

SAN GABRIEL VALLEY SUPERFUND SITE
PUENTE VALLEY OPERABLE UNIT
CITY OF INDUSTRY, CALIFORNIA

Volume 1

September 1998

United States Environmental Protection Agency
Region IX - San Francisco, California

SCANNED

Part I
Decision Summary

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SCANNED

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Declaration

Site Name and Location

This Interim Record of Decision (ROD) addresses the contamination at the Puente Valley Operable Unit (PVOU) located within the San Gabriel Valley Superfund Site in Los Angeles County, California.

Statement of Basis and Purpose

This ROD presents the selected interim remedial action for the PVOU of the San Gabriel Valley Superfund Site in accordance with the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. §§ 9601 et. seq., as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA) (collectively referred to herein as CERCLA) and to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan, 40 CFR Part 300 (NCP). This decision is based on the Administrative Record for this site.

The State of California, acting through the California Department of Toxic Substances Control (DTSC) and the Los Angeles Regional Water Quality Control Board (RWQCB), concur with the selected remedy.

Assessment of the Site

The response action selected in this ROD is necessary to protect the public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment.

Description of the Interim Action

This ROD addresses ground water contaminated with volatile organic compounds (VOCs). EPA's objective is to protect human health and the environment. The selected remedy is containment of ground water contaminated with VOCs in the shallow and intermediate zones at the mouth of Puente Valley to prevent further migration of existing ground-water contamination. This remedy includes performance criteria that will require extraction and treatment of contaminated ground water at certain locations along the downgradient edge of the contamination and will require continued monitoring and evaluation at other locations. Treated ground water will be provided to local water purveyors or discharged to Puente Creek, immediately upstream of San Jose Creek. In addition, this remedy includes monitoring in the shallow, intermediate, and deep ground-water zones at mid-valley and at the mouth of the valley.

DECLARATION

Statutory Determinations

The selected remedy is protective of human health and the environment, complies with federal and state requirements that are legally applicable or relevant and appropriate to the remedial action and is cost effective. Performance criteria and remediation components of the selected remedy satisfy the statutory preference for remedies that employ treatment that reduces toxicity, mobility, or volume as a principal element.

Because this remedy will result in hazardous substances remaining onsite above health-based levels, a review will be conducted at least once every five years after commencement of remedial action to ensure that the remedy continues to provide adequate protection of human health and the environment.

Keith A. Takata
Keith A. Takata
Director of Superfund Division
U.S. Environmental Protection Agency, Region IX

9-30-98
Date

Part I Decision Summary

1 Site Location and Description

1.1 Location and Topography

This interim Record of Decision (ROD) covers the Puente Valley Operable Unit (PVOU) located within the southeastern portion of the San Gabriel Valley (Figure 1), approximately 25 miles from the Pacific coast, in eastern Los Angeles County. Located within the San Gabriel Valley is the San Gabriel Basin, a broad piedmont plain that slopes gradually to the southwest at a gradient of approximately 65 feet per mile (CDWR, 1934). This structural basin is a natural ground-water reservoir that collects rainfall on the valley floor and run-off from the surrounding highlands, recharging the ground-water aquifer.

The San Gabriel Basin is bounded to the southwest, south, and southeast by a crescent-shaped system of low hills. The hills making up the system, from west to east, are the Repetto, Merced, Puente, and San Jose Hills. The only significant break along this boundary falls between the Merced and Puente Hills at Whittier Narrows. Whittier Narrows is the lowest point in the San Gabriel Valley and is the exit for the San Gabriel River and Rio Hondo and their tributaries, which serve as the drainage system for the valley.

The Puente Valley is a "horn-shaped" valley with a mouth that opens into the Main San Gabriel Ground-Water Basin at the west (CDWR, 1934). It covers a surface area of 10,900 acres, and is approximately 12-1/2 miles long and ranges from less than 2 miles wide at the eastern end to over 3 miles wide at the western end. Puente Valley varies in elevation from over 800 feet above mean sea level (msl) at the eastern boundary to approximately 300 feet msl at the western boundary. Puente Valley is bounded on the north by the San Jose Hills and on the south by the Puente Hills.

The surface geology in the Puente Valley is a mixture of stream channel deposits from San Jose Creek, consisting of clay, silt, sand, and minor amounts of gravel (EPA, 1993c). The creek, a tributary to the San Gabriel River, flows through the center of the valley and serves as the major surface water drainage in the area.

The eastern boundary of the PVOU coincides with the boundary of the San Gabriel Valley at the eastern end of Puente Valley. The western boundary of the PVOU extends beyond the end of the Puente Valley into the Main San Gabriel Valley, and incorporates production wells located north and west of the Puente Valley (EPA, 1993c).

The PVOU spans portions of both the Puente Ground-Water Basin and the Main San Gabriel Ground-Water Basin. Although there is no exact dividing line between these basins, the general boundaries are described in the Puente Narrows Agreement, dated May 8, 1972, between the Puente Basin Water Agency and the Upper San Gabriel Valley Municipal Water District. The general area of division between the basins is the Puente Narrows, which is

defined in the Puente Narrows Agreement as "The subsurface geologic constriction at the downstream boundary of Puente Basin."

1.2 Climate

The region in which Puente Valley is located has a Mediterranean climate. Like most of the South Coastal Basin, intermittent rain occurs during the winter; and summers are predominantly dry. The mean seasonal temperature of the Puente Valley varies from the upper 50 degrees Fahrenheit (°F) range in the winter to the mid 80°F range in the summer. The average annual temperature is 62°F. Temperatures rarely drop below freezing; however, in the San Gabriel Valley, values have been recorded as low as 22°F and as high as 111°F (CDWR, 1966).

The prevailing wind direction is from the south to southwest. During the fall and winter months, however, Santa Ana wind conditions, unique to Southern California, are known to occasionally affect the local weather, increasing temperatures and bringing warm dry air from the northeast (James M. Montgomery, 1992).

All precipitation in the Puente Valley occurs as rainfall. Based on information presented in the Ninth Annual Report (Puente Basin Watermaster, 1995), the average annual rainfall for the Puente Valley is approximately 18 inches per year, with approximately 77 percent of the precipitation occurring between December and March. Within the valley, precipitation levels vary slightly, mainly as a result of differences in ground surface elevation. Precipitation levels in the valley are known to fluctuate significantly from year to year, creating periods of above-normal rainfall levels interspersed with periods of persistent drought.

1.3 Land Use

The majority of the Puente Valley is highly industrialized and is occupied by the City of Industry, an incorporated city that covers approximately 11 square miles. According to information provided by the City of Industry (City of Industry, 1995), 96 percent of the city is zoned for industrial uses; and 4 percent is zoned for commercial purposes. Nearly 85 percent of the land within the boundaries of the City of Industry has been developed, and accommodates approximately 1,700 businesses. Currently, the City of Industry is planning to develop an additional 1,500 acres, all zoned for industrial and commercial uses. The small amount of land within the City of Industry allotted for residential purposes is occupied by 631 residents (City of Industry, 1995). The Cities of La Puente and Walnut also occupy portions of the Puente Valley at the northwestern and eastern borders, respectively. The portions of the PVOU occupied by these cities are zoned primarily for residential purposes. Prior to the early 1950s, Puente Valley was primarily used for agricultural purposes.

1.4 Surface Water

Two major stream systems carry surface flow from the San Gabriel Valley: the San Gabriel River and the Rio Hondo and their tributaries. The headwaters for these two systems are in

the San Gabriel Mountains. The systems transverse the San Gabriel Valley in a southwesterly direction and exit the valley at Whittier Narrows (EPA, 1993c). Except in the case of significant storms, these channels do not carry much natural run-off (EPA, 1993c).

Nearly all of the stream channels contributing to the drainage of the San Gabriel Valley have been modified with the addition of concrete lining. This lining minimizes recharge of the aquifer by surface water flow, except in portions of the San Gabriel River that are not lined and are intended as areas for ground-water recharge. In addition, the major channels have been supplemented with flood control reservoirs.

The majority of the flow within the San Gabriel River is contributed by run-off draining from the San Gabriel Mountains, directly into the river (California Department of Water Resources [CDWR], 1966). A portion of the flow, however, is contributed by the Walnut and San Jose Creeks and by the tributaries of the Raymond Basin (to the northwest of the San Gabriel Valley).

San Jose Creek, a tributary of the San Gabriel River, is the only surface water feature within the PVOU with continuous flow. Continuous surface water flows in San Jose Creek are sustained by discharge from the Pomona Valley Treatment Plant, industrial wastewater discharge, treated ground-water discharge from one industrial facility, and intermittent ground water discharging through weepholes.

Most of the stretch of San Jose Creek that runs through the PVOU is concrete lined. However, near the western boundary of the PVOU, the last approximate 1-1/3 miles of the channel are unlined. The lined portion of the channel is underlain by a subdrain system consisting of a series of longitudinal perforated collector pipes embedded in a coarse drain material, which is underlain by a shallow layer of filter material. The subdrain collector pipes are designed to relieve hydrostatic pressure from building up under the concrete channel, by allowing shallow ground water from beneath the channel to flow into the surface water channel either through weep holes or discharge pipes in the channel walls.

A portion of the surface water flow in San Jose Creek is allowed to recharge ground water, both in unlined reaches of the San Jose Creek and San Gabriel River and in the San Gabriel River Spreading Grounds. These spreading grounds are located in the Central Basin, along the San Gabriel River, downstream of where San Jose Creek feeds into the river.

1.5 Geology and Hydrogeology

1.5.1 San Gabriel Valley/Basin

The Main San Gabriel Basin is filled with alluvial deposits, primarily of Quaternary age, which overlie relatively impermeable rock. These deposits are 2,000 to 4,000 feet thick over the center of the basin and range between approximately 250 to 800 feet thick at the basin outlet in Whittier Narrows. The distribution of the sediments deposited in the basin is controlled both by the distance from the sediment source and by the position relative to river and tributary courses. Across the Main San Gabriel Basin, the alluvial deposits show a high degree of variability in sediment type, both vertically and laterally (EPA, 1993c).

There are three general water-bearing formations of the Main San Gabriel Basin. The Upper Pico Formation is a Pliocene marine deposit, while the Older and Recent Alluvium are nonmarine sediments of Recent and Pleistocene age (CDWR, 1966). The Upper Pico Formation is a semiconsolidated marine deposit, consisting mainly of sand, silt, and clay interbedded with gravels. In the vicinity of Whittier Narrows, the formation is water bearing. Where it crops out in the Repetto, Merced, and Puente Hills, however, it contains little or no water (CDWR, 1966).

Older Alluvium refers to those alluvial deposits that were laid down during the late and possibly early Pleistocene period. It tends to occur as unsorted debris, yellowish to reddish brown in color. Grain sizes range from fine silt to boulders over 2 feet in diameter. In the Main San Gabriel Basin, most of the subsurface sediment is made up of Older Alluvium (CDWR, 1966).

Recent Alluvium tends to be light-gray to buff in color and is made up of a range of coarser materials: boulders, gravels, and sands. Because of its coarse nature, Recent Alluvium is efficient in the absorption, transmission, and yielding of water.

Major structural features controlling regional ground-water flow in the San Gabriel Basin include the topographic highs (i.e., San Gabriel Mountains and southern hills) and topographic lows (i.e., San Gabriel Basin and subbasins). Four major faults in the San Gabriel Basin potentially impact ground-water flow: the Sierra Madre Fault System, the Raymond Fault, the Lone Hill-Way Hill Fault, and the Workman Hill Fault. As discussed in the Feasibility Study (FS), other faults (i.e., Walnut Creek Fault and Handorf Fault) also appear to exert some influence on ground-water movement in the San Gabriel Basin.

1.5.1.1 Puente Valley/Basin

Puente Valley is bounded on the north by the San Jose Hills and on the south by the Puente Hills. The San Jose Hills and Puente Hills are composed primarily of marine sedimentary rocks ranging from Pliocene to Miocene age (1.6 to 23.4 million years). Material derived from these hills has contributed a large portion of the alluvium in the Puente Valley.

The materials making up the Puente and San Jose Hills have reported hydraulic conductivities generally two orders of magnitude less than the alluvial deposits filling the Puente Valley. The deposits filling Puente Valley are derived from the Puente and San Jose Hills and consist of alluvium interbedded with other deposits. The fill deposits range in thickness from approximately 1,300 feet in the northwestern portion of the PVOU to less than 25 feet thick in the extreme eastern portion and valley perimeter. They consist, to a large extent, of clay and silty clay with lenses of sand and gravel. Some of these permeable lenses have been shown to persist throughout much of the valley.

The alluvial deposits filling Puente Valley were derived from two primary sources: materials derived locally from the San Jose Hills to the north and Puente Hills to the south (Older Alluvium), and Recent Alluvium deposited by San Jose Creek (CDWR, 1934). Older Alluvium is exposed over much of the periphery of the Puente Valley, with fingers of Recent Alluvium exposed up the center of the valley into the eastern extremities. The Older Alluvium consists of debris ranging in size from fine silt to medium boulders, derived primarily from the surrounding hills.

The Puente Formation underlies the alluvium and is considered to be relatively nonwater-bearing bedrock. This bedrock forms a somewhat irregular basement in the valley and, in places, protrudes through the alluvium, creating isolated outcrops of bedrock within the basin (CDWR, 1966).

1.5.2 Hydrogeology

According to the CDWR report (1966), the Main San Gabriel Ground-Water Basin comprises approximately 167 square miles of water-bearing valley land. The maximum depth of alluvial fill within the main basin is unknown, though it is expected to be between 2,000 and 4,000 feet (CDWR, 1934; and EPA, 1993c). The estimated total storage capacity of the Main San Gabriel Basin is 10.44 million acre-feet (CDWR, 1979); however, because of the great depth of the basin and the subsequent inaccessibility of much of the ground water, the available supply of the basin is much less.

The majority of natural inflow to the Main San Gabriel Basin is in the form of surface water, originating as precipitation and entering through stream channels or as overland flow. Subsurface flow crosses into the San Gabriel Valley from the Raymond Ground-Water Basin across the Raymond fault on the northwest, and from the Chino Ground-Water Basin on the east.

The total water available to the Puente Basin is supplied primarily by precipitation on the valley floor and adjacent watershed, and by underflow from surrounding areas. Currently, water is also being imported into the Puente Basin from the Pomona Water Reclamation Plant and from the Metropolitan Water District of Southern California (Metropolitan) by the Rowland and Walnut Water Districts (Puente Basin Watermaster, 1995).

Because the Puente Basin is constrained on the north and south by bedrock outcrops, ground water generally flows toward the west and northwest. Evaluation of ground-water elevation data collected in February 1996 indicates that the horizontal hydraulic gradient for the area east of Azusa Avenue ranges from 0.015 to 0.033. In the mid-valley area, the horizontal gradient ranges from 0.004 to 0.007. Gradients in the mouth of the valley (i.e., northwest of Hacienda Boulevard) range from 0.006 to 0.010. Ground-water flow velocity in the PVOU has been reported to range between 0.6 foot/day and 3.7 feet/day and may be somewhat higher near the area of pumpage at the mouth of the valley. Flow velocity is directly influenced by the horizontal gradient. Therefore, flow velocities are relatively higher in areas of higher horizontal gradient (EPA, 1993c).

1.6 Ground-water Management

Administratively, two ground-water basins exist within the PVOU: the Puente Basin and the Main San Gabriel Basin. The complete Puente Basin and southeast tip of the Main San Gabriel Basin are located within the PVOU. The rights to pump ground water from these basins are adjudicated (i.e., assigned to specified users in accordance with a court judgment).

Water rights in the Main San Gabriel Basin were adjudicated in a stipulated judgment by the Superior Court of Los Angeles County in 1972 (amended in 1989), in the case, *Upper San Gabriel Valley Municipal Water District v. City of Alhambra* (Case Number 924128). This

adjudication resulted in assigning water rights to approximately 50 parties that each hold rights to greater than one percent of the natural safe yield of the basin (152,700 acre-feet per year, established in the judgment), and approximately 100 parties that each hold rights to less than 1 percent of the natural safe yield.

The judgment also establishes the duties of a Watermaster, which include annually determining an operating safe yield for the basin, monitoring pumpers' compliance with the judgment, issuing permits for all new and increased pumping in the basin, and preparing an annual report that includes details of pumping activities in the basin. The amount of ground water that each water rights holder can pump in any year is adjusted by prorating the pumper's prescriptive rights (percentage of natural safe yield) by the operating safe yield, as established by the Watermaster.

The majority of the ground water pumped from the Main San Gabriel Basin is used for drinking water, supplied to the public by purveyors that are regulated as public water supply systems. Annually, pumping typically equals or exceeds the operating safe yield of the basin. When excess extraction occurs, the judgment has established provisions for assessing pumpers the cost of importing water to replenish the excess amount extracted.

The water rights in the Puente Basin were adjudicated in a stipulated judgment by the Superior Court of Los Angeles County in 1986, in the case, *Puente Basin Water Agency, et al., v. City of Industry, et al.* (Case Number C369220). This adjudication resulted in assigning water rights to five primary producers in the basin. As with the Main San Gabriel Basin, the Puente Basin judgment established the duties of a Watermaster, which are similar in nature to the Main San Gabriel Basin Watermaster.

2 Site History

2.1 Overview of Site Activities

The San Gabriel Valley has been the subject of environmental investigation since 1979 when ground water contaminated with volatile organic compounds (VOCs) was first identified. In May 1984, four broad areas of contamination within the basin were listed as San Gabriel Areas 1 through 4 on the Environmental Protection Agency's (EPA's) National Priorities List (NPL). EPA subsequently divided the basin into eight operable units (OUs) to provide a means of describing hydrogeology and contaminant distribution, and planning remedial activities in the basin.

In 1986, data were compiled and reviewed to develop a preliminary conceptual hydrogeologic model of the San Gabriel Valley, as described in the Supplemental Sampling Program (SSP) Report (EPA, 1986). The results of the SSP investigations provided much of the basis for planning the remedial investigations that have been performed in the San Gabriel Valley since 1986. The Interim San Gabriel Basin Remedial Investigation Report (EPA, 1992b) describes these investigations and incorporates their results into an integrated discussion of EPA's understanding of hydrogeologic conditions in the basin.

In April 1993, EPA issued a draft Statement of Work (SOW) for an Interim remedial investigation/feasibility study (RI/FS) to address the PVOU. Following negotiations between EPA and the Puente Valley Steering Committee (PVSC), an Administrative Order on Consent (AOC) was executed in which the PVSC agreed to perform the investigation detailed in the current SOW, which is a part of the AOC.

2.2 Remedial Investigation Activities

EPA developed the RI/FS process for conducting environmental investigations under Superfund. The RI/FS approach is the methodology that the Superfund program has established for characterizing the nature and extent of risks posed by uncontrolled hazardous waste sites to evaluate potential remedial options.

The RI serves as a mechanism to collect data for site characterization. The FS serves as the mechanism for development, screening, and evaluation of potential remedial alternatives. The goals of the RI/FS did not include identifying or evaluating soil and soil gas contamination, or developing alternatives for remedial action to address shallow ground-water contamination that should be addressed through parcel- or source-specific actions (CDM, 1993). Intrinsic to the adopted approach was the assumption that parcel- or source-specific actions will continue to be taken under the purview of the Los Angeles Regional Water Quality Control Board (RWQCB). Existing data indicate that source control actions under the purview of the RWQCB have a significant beneficial effect on water quality in the shallow zone.

The goals¹ of the RI/FS process for the PVOU were to:

- Assess the nature and extent of ground-water contamination in the PVOU to support an EPA decision on one or more interim actions, which may include a ground-water contamination migration control action in the northwestern Puente Valley.
- Assess water quality in the San Jose Creek channel and subdrain during ground-water discharge conditions to assess the potential for increased contaminant migration in the channel and subdrain system, and to evaluate the exposure risk associated with such migration.
- Develop, screen, and analyze alternatives for appropriate remedial action(s) to manage the vertical and horizontal migration of regional contaminated ground water from highly contaminated to less contaminated (i.e., an order of magnitude less) portions of the PVOU. Such remedial action(s) will focus on contaminated regional ground water that is not being managed within the boundary of a specific parcel of property through parcel-specific response.

An Interim Remedial Investigation was conducted for the PVOU during the period September 1994 through February 1996. As detailed in the Interim RI/FS SOW and Work Plan, the Interim RI consisted of two primary components, a ground-water investigation of the PVOU and a surface water/ground-water interaction investigation of San Jose Creek. The final RI Report was submitted to EPA in May 1997.

An FS was performed for the PVOU in 1996 and 1997. The FS identified remedial action objectives, assembled remedial alternatives, and provided an evaluation of the alternatives versus nine evaluation criteria that EPA established. EPA issued the Final FS Report in May 1997.

¹The "goals" stated in the SOW and Work Plan were used to identify the scope of the PVOU RI/FS. They should not be confused with "remediation goals" developed under the NCP.

3 Enforcement Activities

EPA began its enforcement efforts in the PVOU in 1985 by searching historical federal, state, and local records for evidence of chemical usage, handling, and disposal in the Puente Valley area. At approximately the same time, the RWQCB initiated its Well Investigation Program (WIP) to identify sources of ground-water contamination. In 1989, EPA entered into a cooperative agreement with the RWQCB to expand the WIP program, to assist EPA in determining the nature and extent of the sources of ground-water contamination in the San Gabriel Valley, and to identify responsible parties. The RWQCB directly oversees facility-specific investigations in the Puente Valley area; EPA helps fund these activities and, when necessary, uses its enforcement authority to obtain information and ensure that facility investigations are promptly completed.

As of September 1998, the RWQCB has sent chemical use questionnaires to approximately 730 facilities in the Puente Valley area; inspected approximately 650 of these facilities; and directed approximately 190 facilities to perform soil, soil gas, and/or ground-water investigations. EPA has concurrently used its authority under Section 104(e) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) to request information from more than 150 current and former owners and operators in the PVOU. From these investigations, EPA has identified 50 facilities as sources of ground-water contamination for the PVOU.

From 1990 through 1993, EPA sent General Notice of Liability letters to approximately 109 entities in and around the Puente Valley area. On May 26, 1993, EPA sent Special Notice letters to 58 potentially responsible parties (PRPs), requesting that these parties present a good faith offer to perform the RI/FS for the PVOU. Forty-two of these PRPs formed the PVSC and in September 1993 entered into an AOC with EPA to conduct the RI/FS. Also in September 1993, EPA issued a Unilateral Administrative Order (UAO) to two PRPs, Goe Engineering and Diversey Corporation, that failed to present a good faith offer. Diversey Corporation completed the activities that the UAO required in 1996, and the PVSC and EPA completed the RI/FS in May 1997.

Since 1993, EPA and the RWQCB have continued to investigate potential sources of contamination. In June 1997, EPA notified 11 additional entities that they had been identified as PRPs. EPA is now in the process of identifying a final group of PRPs for the PVOU. EPA will contact the new PRPs shortly after the ROD is issued. EPA anticipates issuing Special Notice letters to the Puente Valley PRPs a few months after all of the PRPs have been identified; however, EPA may offer to settle with some of the smaller PRPs in lieu of issuing Special Notice letters.

EPA and the RWQCB have undertaken enforcement activities elsewhere in the San Gabriel Valley, including facility investigations, issuance of CERCLA section 104(e) requests for information, issuance of General and Special Notice letters, and filing of cost recovery litigation. PRPs in the El Monte and South El Monte OUs have entered into Administrative Consent Orders to perform the RI/FS for their respective OUs. EPA also issued UAOs to two parties in the El Monte OU. In the Baldwin Park OU, EPA issued a ROD in March 1993,

3 ENFORCEMENT ACTIVITIES

and in May 1997 sent Special Notice letters to 19 PRPs seeking performance of the remedial design and remedial action (RD/RA). Soon thereafter, perchlorate contamination was discovered in the Baldwin Park OU, leading EPA to initiate an amendment of the ROD and extend the deadline for the submission of a good faith offer to July 1999.

SCANNED

4 Scope and Role of this Document

There are four areas of ground-water contamination in the San Gabriel Basin aquifer listed on the NPL as San Gabriel Valley Areas 1 through 4. The San Gabriel Valley has been divided into eight different OUs: Alhambra, Baldwin Park, El Monte, South El Monte, Whittier Narrows, Suburban, Richwood, and Puente Valley (Figure 1). The PVOU addresses ground-water contamination corresponding to the San Gabriel Valley Area 4 NPL site.

EPA initiated an overall RI/FS for the entire San Gabriel site in 1984 with a preliminary investigation termed the Supplemental Sampling Program. This investigation was completed in 1986 and included the sampling of 70 existing ground-water wells for a full range of organic contaminants, collection and evaluation of existing data, and regional ground-water flow modelling. Data were compiled and reviewed to develop a preliminary conceptual hydrogeologic model of the San Gabriel Valley. The results of the investigations provided much of the basis for planning the remedial investigations that have been performed in the San Gabriel Valley since 1986.

The PVOU is classified as an interim action because it is intended to control the migration of contamination. Additional remediation may be needed to clean up VOC contamination remaining in the ground water. EPA will use information collected during operation of the selected remedy to help determine the need for additional actions and the nature of the final remedy. This interim action will neither be inconsistent with, nor preclude, implementation of the final remedy. All of the OU specific actions currently being undertaken in the San Gabriel Valley are interim actions. It is anticipated that a final ROD will be issued for the entire San Gabriel Valley Superfund site once RD/RA work has been completed at all of the separate OUs.

5 Highlights of Community Participation

SCANNED

The Proposed Plan for this remedy, in the form of a fact sheet, was distributed to the parties on EPA's mailing list for the PVOU. The Proposed Plan, together with the Puente Valley Operable Unit Interim Remedial Investigation (RI) (CDM, 1997) and Feasibility Study (FS) (EPA, 1997), were also made available at EPA's Regional Office in San Francisco, and locally at three information repositories: the Hacienda Heights Public Library, the West Covina Library, and the Rosemead Library. The Administrative Record for the PVOU was placed in CD-ROM format in each repository, and the RI/FS was available on microfilm at each repository.

EPA held a public meeting to present the Proposed Plan and EPA's preferred alternative on January 28, 1998, at the La Puente High School in La Puente, California. Notice of EPA's public meetings, availability of the Proposed Plan, and the announcement of a 30-day public comment period were published in the following newspapers:

- Los Angeles Times, San Gabriel Valley Edition January 16, 1998
- San Gabriel Valley Tribune January 16, 1998

EPA extended the public comment period in response to requests from members of the public. EPA prepared a fact sheet announcing the extension of the public comment period and distributed it to the parties on EPA's mailing list for the PVOU. The total public comment period was 60 days and ran from January 15 to March 16, 1998. EPA received several sets of written comments during the public comment period. These comments are addressed in the Responsiveness Summary, included as Part II of this ROD (contained in Volume 2).

This decision document presents the selected remedial action for the ROD site and has been chosen in accordance with CERCLA, as amended, and to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). The ROD is based on the Administrative Record.

6 Summary of Site Characteristics

SCANNED

The PVOU is part of the San Gabriel Valley Superfund Site located in eastern Los Angeles County, California. Puente Valley is an approximately 12-1/2-mile-long and 2- to 2-1/2-mile-wide tributary basin to the Main San Gabriel Basin.

The majority of the PVOU is highly industrialized and is occupied by the City of Industry, an incorporated city that covers approximately 11 square miles. Approximately 96 percent of the city is zoned for industrial purposes; the rest is zoned for commercial purposes. Nearly 85 percent of the land within the boundaries of the City of Industry has been developed, and accommodates approximately 1,700 businesses. Future development plans will likely be for industrial and commercial uses.

A small amount of land within the City of Industry is allotted for residential purposes and is occupied by approximately 631 residents. The Cities of La Puente and Walnut also occupy portions of the PVOU. These portions are zoned primarily for residential purposes and are likely to remain residential.

The State of California considers all subsurface zones of relatively high permeability (shallow, intermediate, and deep) in the PVOU to be municipal water sources. VOCs are the primary organic contaminants found in the PVOU above EPA maximum contaminant levels (MCLs). Tetrachloroethene (PCE) and trichloroethene (TCE) are the VOCs that have been detected most often in ground water, although 1,1-dichloroethane, 1,1-dichloroethene, 1,2-dichloroethene, and 1,1,1-trichloroethane have also been detected above MCLs in the PVOU. Figures 2 and 3 show 1997 VOC concentrations in the shallow and intermediate zones.

Sources of the ground-water contamination include firms engaged in metal cleaning, coating, and manufacturing; chemical product manufacturing; plastics; aerosols; electric component manufacturing; printing; rubber manufacturing; die casting; and engineering. To address these sources of ground-water contamination, the RWQCB, under a grant from EPA, oversees investigations and cleanups at facilities where releases have occurred. In general, VOC concentrations are highest in the shallow ground water beneath facility source areas where releases have occurred. VOCs have also spread to the intermediate zone and portions of the deep zone primarily as a result of downward hydraulic gradients.

7 Summary of Site Risks

In 1994, EPA completed a Preliminary Baseline Risk Assessment for the Puente Valley OU (EPA, 1994). The purpose of the risk assessment was to evaluate potential adverse health effects from exposure to contaminated ground water. The results of the risk assessment assisted EPA to determine if any remedial actions would be necessary to protect human health or the environment. The risk assessment process included: (a) identifying chemicals present in ground water, (b) characterizing the population potentially exposed to these contaminants, and (c) evaluating the potential health effects resulting from exposure to the contaminated ground water. EPA has evaluated how individuals might be exposed to these contaminants under both current and future conditions, and potential risks to natural resources.

7.1 Identification of Chemicals of Potential Concern

Fifty-four VOCs detected in ground water from production and monitoring wells in the PVOU were included in the risk assessment as chemicals of potential concern (COPCs) in ground water. Eight VOCs detected in surface water samples were included in the risk assessment as COPCs in surface water. (See Tables 2 and 3 in the Puente Valley Operable Unit Preliminary Baseline Risk Assessment prepared by CH2M HILL for the EPA, March 1, 1994.) Table 1 summarizes the COPCs in ground water used in the baseline risk assessment, and their respective applicable or relevant and appropriate requirements (ARARs).

7.2 Exposure Assessment

Exposure assessment is the determination or estimation of the magnitude, frequency, duration, and route of exposure. This section briefly summarizes the potentially exposed populations, the exposure pathways evaluated, and the exposure quantification from the risk assessment performed for the PVOU.

Land use in the PVOU includes primarily commercial/industrial and residential. Ground water from five of the seven production wells sampled in 1991 and 1992 is currently being used for domestic purposes. Exposure to contaminants in ground water could occur through the use of ground water for domestic purposes, such as ingestion of water used for drinking and cooking. Residents and workers could also be exposed to contaminants in ground water through the transport of VOCs from ground water through soil and into ambient air or through the foundation of a building. EPA evaluated three scenarios in the risk assessment for the PVOU in which individuals might be exposed to the contaminated ground water:

1. Potential for a current resident to be exposed to contamination in ground water through domestic use
2. Potential for a future resident to be exposed to contamination in ground water through domestic use

3. Potential for current and future workers and residents to be exposed to contamination in ground water through transport of VOCs from ground water through the foundation of a building

EPA evaluates potential exposure to contaminated ground water in the absence of regulatory controls, such as the Safe Drinking Water Act, which is designed to prevent delivery of water for potable use if contaminant concentrations exceed MCLs. Based on potential for exposure frequency, duration, and estimated intake, residents exposed to contaminated ground water used for domestic purposes are expected to be the maximally exposed population.

7.3 Toxicity Assessment

Table 1 shows the COPCs for the PVOU. One of the compounds, vinyl chloride, is a known human carcinogen (EPA weight of evidence class A); four of the compounds (tetrachloroethene, trichloroethene, 1,2-dichloroethane, and methylene chloride) are probable human carcinogens (EPA weight of evidence class B2); and three of the compounds (1,4-dichlorobenzene, 1,1-dichloroethene, and 1,1,2-trichloroethane) are possible human carcinogens (EPA weight of evidence class C). Based on data from various animal studies, the oral carcinogenic slope factors for these compounds are:

Vinyl Chloride – 1.9 (mg/kg/day)⁻¹ (Source: Health Effects Assessment Summary Tables (HEAST), EPA, 1992a).

Tetrachloroethene – 0.051 (mg/kg/day)⁻¹ (Source: Environmental Criteria and Assessment Office, EPA, 1993b).

Trichloroethene – 0.011 (mg/kg/day)⁻¹ (Source: Health Effects Assessment Summary Tables, EPA, 1992a).

1,2-Dichloroethane – 0.091 (mg/kg/day)⁻¹ (Source: Integrated Risk Information System (IRIS), EPA, 1993a).

Methylene Chloride – 0.0075 (mg/kg/day)⁻¹ (Source: Integrated Risk Information System (IRIS), EPA, 1993a).

1,4-Dichlorobenzene – 0.024 (mg/kg/day)⁻¹ (Source: Health Effects Assessment Summary Tables, EPA, 1992a).

1,1,2-Trichloroethane – 0.057 (mg/kg/day)⁻¹ (Source: Integrated Risk Information System (IRIS), EPA, 1993a).

With the exception of 1,4-dichlorobenzene, all of the above compounds are also considered carcinogenic through the inhalation route. Based on data from various animal studies, the inhalation carcinogenic slope factors are:

Vinyl Chloride – 0.3 (mg/kg/day)⁻¹ (Source: Health Effects Assessment Summary Tables, EPA, 1992a).

Tetrachloroethene – 0.002 (mg/kg/day)⁻¹ (Source: Environmental Criteria and Assessment Office, EPA, 1993b).

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Trichloroethene – 0.006 (mg/kg/day)⁻¹ (Source: Environmental Criteria and Assessment Office, EPA, 1993b).

1,2-Dichloroethane – 0.091 (mg/kg/day)⁻¹ (Source: Integrated Risk Information System (IRIS), EPA, 1993a).

Methylene Chloride – 0.002 (mg/kg/day)⁻¹ (Source: Integrated Risk Information System (IRIS), EPA, 1993a).

1,1,2-Trichloroethane – 0.056 (mg/kg/day)⁻¹ (Source: Integrated Risk Information System (IRIS), EPA, 1993a).

At this time, slope factors are not available for the dermal route of exposure. The preliminary risk assessment did not quantitatively estimate dermal absorption from household water use because of the uncertainty associated with making a quantitative estimate of such exposure.

In addition to their classification as carcinogens, five of the carcinogenic COPCs have toxicity data indicating their potential for adverse noncarcinogenic effects in humans. The chronic toxicity data available for these compounds have been used to develop oral reference doses (RfDs). The oral RfDs for these compounds are:

Tetrachloroethene – 0.01 (mg/kg/day) (Source: Integrated Risk Information System (IRIS), EPA, 1993a).

Trichloroethene – 0.006 (mg/kg/day) (Source: Environmental Criteria and Assessment Office, EPA, 1993b).

Methylene Chloride – 0.06 (mg/kg/day) (Source: Integrated Risk Information System (IRIS), EPA, 1993a).

1,1,2-Trichloroethane – 0.004 (mg/kg/day) (Source: Integrated Risk Information System (IRIS), EPA, 1993a).

1,4-dichlorobenzene is also considered to have noncarcinogenic effects via inhalation. The inhalation reference dose for 1,4-dichlorobenzene is 0.2 milligrams per kilogram per day (mg/kg/day) (HEAST).

Chronic toxicity testing has also established that 1,1-dichloroethene, 1,2-dichloroethene, 1,1,1-trichloroethane, and 2-propanone have noncancer endpoints that primarily affect the liver. The oral RfDs for these compounds are:

1,1-Dichloroethene – 0.009 (mg/kg/day) (Source: Integrated Risk Information System (IRIS), EPA, 1993a).

1,2-Dichloroethene – 0.009 (mg/kg/day) (Source: Health Effects Assessment Summary Tables, EPA, 1992).

1,1,1-Trichloroethane – 0.09 (mg/kg/day) (Source: Health Effects Assessment Summary Tables, EPA, 1992).

2-Propanone – 0.10 (mg/kg/day) (Source: Integrated Risk Information System (IRIS), EPA, 1993a).

7.4 Risk Characterization Summary

This section presents the results of the evaluation of the potential risks to human health associated with exposure to contaminated ground water at the PVOU. Exposure scenarios are evaluated by estimating the noncarcinogenic and carcinogenic risks associated with them.

The potential for carcinogenic effects is evaluated by estimating the excess lifetime cancer risk, which is the probability of developing cancer during one's lifetime over the background probability of developing cancer (i.e., if no exposure to site contaminants occurred). These risks are probabilities that usually are expressed in scientific notation (e.g., 1×10^{-6}). An excess lifetime cancer risk of 1×10^{-6} indicates that an individual has a 1 in 1,000,000 chance of developing cancer as a result of site-related exposure. EPA uses an excess lifetime cancer risk of 1×10^{-6} as an acceptable incremental cancer risk above background, and an excess lifetime cancer risk of one in ten thousand (1×10^{-4}) as the point at which action is generally warranted at a site (EPA, 1991c), thus creating EPA's generally acceptable risk range of 1×10^{-4} to 1×10^{-6} .

Noncarcinogenic risk is assessed by comparing the estimated daily intake of a chemical to its RfD. An RfD represents a level that an individual may be exposed to without any adverse effects. The comparison is expressed as a hazard quotient (HQ). An HQ less than one indicates that noncarcinogenic effects from exposure to that chemical are unlikely. HQs for all chemicals of concern that affect the same target organ are added to generate the Hazard Index (HI). An HI less than one indicates that noncarcinogenic effects from all the contaminants are unlikely. Conversely, an HI greater than one indicates that site-related exposures may present a risk to human health.

The results of the baseline risk assessment indicate that the potential for a future resident to be exposed to ground-water contamination through domestic use resulted in a total estimated incremental lifetime cancer risk greater than one person in one thousand (1×10^{-3}). This risk exceeds the acceptable risk range and therefore indicates action at the site is warranted.

Exposure of Residents to Ground Water Through Domestic Use. Tables 2 and 3 present the Estimated Noncancer Hazard Index and Total Excess Lifetime Cancer Risk, respectively, from domestic use of ground water. To assess potential current residential exposure to ground water through domestic use, all active production wells sampled in 1991 and 1992 that had detections for VOCs were evaluated. These wells include production wells 08000077, 98000068, and 98000108. The estimated HI is less than one for both the average and Reasonable Maximum Exposure (RME) scenarios for these three production wells. The estimated excess lifetime cancer risk for both the average and RME exposure scenarios are below or within EPA's 1×10^{-4} to 1×10^{-6} acceptable risk range.

To assess potential future exposure to contamination in ground water through domestic use, the preliminary risk assessment focused on the eight areas within the PVOU that have ground-water concentrations exceeding 10 times the MCLs. Potential future residential exposures were evaluated based on well groups sampled in 1991 and 1992 within the eight areas. The estimated hazard index for the average ingestion and inhalation exposure scenario ranges from 0.4 in well group 8 to 40 for ingestion and 30 for inhalation in well

group 3. The RME ingestion and inhalation exposure scenario ranges from 0.5 in well group 8 to 60 in well group 3. Both average and RME exposure scenarios exceed the hazard index of 1 (and hazard quotient of 1) for well groups 3 and 5, suggesting that exposure may present a risk to human health.

The estimated excess lifetime cancer risk for the average exposure scenario exceeds EPA's acceptable risk range in well groups 3, 4, and 5. The estimated excess lifetime cancer risk for the average ingestion exposure scenario ranges from 4×10^{-6} in well group 1 to 4×10^{-4} in well group 5. For the average inhalation scenario, the estimated excess lifetime cancer risk ranges from 7×10^{-7} in well group 1 to 2×10^{-4} in well group 5.

The RME exposure scenarios exceeded EPA's acceptable risk range for well groups 2, 3, 4, 5, 6, and 7. The RME ingestion scenario excess cancer risk ranged from 1×10^{-5} in well group 1 to 3×10^{-3} in well group 5. RME inhalation risks ranged from 2×10^{-6} in well group 1 to 2×10^{-3} in well group 5.

Additionally, exposure to 1,1-dichloroethene in ground water was evaluated using the modified RfD/cancer ratio approach that EPA Regional IX and the Office of Drinking Water recommend. The modified RfD approach is recommended on a chemical-by-chemical basis for certain group C chemicals (e.g., 1,1-dichloroethene) that have limited evidence of carcinogenicity. Because of this limited evidence, the modified RfD approach utilizes the risk assessment protocols for compounds with noncancer effects, but modifies the protocol by adding a safety factor of 10 to be health-protective. Using the modified RfD approach, the estimated ratio for potential current residential exposures ranges from 0.2 to 2. These estimates are health-protective because they do not consider treatment or blending of contaminated water with clean water, and incorporate a safety factor. For potential future residential exposure to 1,1-dichloroethene in ground water, the cancer ratio is greater than one for all well groups except well groups 4 and 6. Although ratios greater than 1 suggest possible cancer concerns, there is very limited evidence that this contaminant is carcinogenic in humans or animals.

Exposure of Workers and Residents to Contaminants in Ground Water Through the Transport of VOCs from Ground Water Through the Foundation of a Building. A screening assessment was used to quantitatively evaluate potential risk to current workers and futures workers and residents as a result of exposure to contaminants in ground water through the transport of VOCs from ground water through the foundation of a building. Five chemicals were evaluated in this assessment: 1,2-dichloroethane, 1,1-dichloroethene, methylene chloride, tetrachloroethene, and trichloroethene. The estimated hazard quotient was less than one for both the residential and worker exposure scenarios. The estimated excess lifetime cancer risk was below or within EPA's acceptable risk range.

Exposure of Vegetation and Wildlife to Contaminants in Surface Water. Eight VOCs were detected in surface water in the San Jose Creek. Potential environmental receptors include vegetation and wildlife exposed to surface water in this area. The detected VOCs will be removed from water primarily by volatilization to the atmosphere. These VOCs are not expected to significantly bioconcentrate in aquatic organisms or adsorb to sediment. A comparison of concentrations detected in surface water to the corresponding chemical-specific acute and chronic Ambient Water Quality Criteria shows that the criteria are

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considerably higher than the detected concentrations. Therefore, no adverse impact to aquatic organisms is predicted.

Based on this risk characterization summary, actual or threatened releases of hazardous substances at this site, if not addressed by the preferred alternative or one of the other active measures considered, may present a current or potential threat to public health, welfare, or the environment.

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8 Description of Remedial Alternatives

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EPA's Remedial Action Objectives (RAOs) for the PVOU are to:

- Prevent exposure of the public to contaminated ground water
- Inhibit contaminant migration from the more highly contaminated portions of the aquifer to the less contaminated areas or depths
- Reduce the impact of continued contaminant migration on downgradient water supply wells
- Protect future uses of less contaminated and uncontaminated areas

The RAOs reflect EPA's regulatory goal of restoring usable ground waters to their beneficial uses wherever practicable, within a time frame that is reasonable; or, if restoration is deemed impracticable, to prevent further migration of the plume, prevent exposure to the contaminated ground water, and evaluate further risk reduction (40 CFR Section 300.430(a)(1)(iii)(F)).

The RAOs for the PVOU do not include numeric, chemical-specific objectives in the aquifer or a time frame for restoration because this is an interim action. They do include VOC "mass removal" as a secondary objective. EPA's selected alternative will remove significant contaminant mass from the aquifer, in effect beginning the restoration process, but it will be designed for migration control rather than mass removal.

Four alternatives were evaluated in the FS for the PVOU:

- Alternative 1 - No Action
- Alternative 2 - Ground-water Monitoring
- Alternative 3 - Ground-water Control in the Shallow and Intermediate Zones at the Mouth of the Valley
- Alternative 4 - Ground-water Control in the Shallow and Intermediate Zones at the Mouth of the Valley and in the Intermediate Zone at Mid-Valley

A brief description of each of the four remedial alternatives is presented below.

8.1 Alternative 1 - No Action

The NCP requires a no-action alternative to provide a baseline for comparison to other alternatives. In this no-action alternative, no remedial actions are taken to control migration from or within the Puente Valley area. This alternative does not include any ground-water monitoring, extraction, or treatment, nor does it consider other ongoing activities that are not part of a CERCLA remedy that may or may not continue into the future. Ground-water

extraction at water supply wells is considered as part of background conditions in the PVOU area and, therefore, would continue to occur under Alternative 1.

8.2 Alternative 2 - Ground-water Monitoring

The only remedial action incorporated into Alternative 2 is ground-water monitoring to monitor compliance with RAOs and performance criteria in the shallow, intermediate, and deep zones at mid-valley and the mouth of the valley. Alternative 2 does not have any extraction, treatment, conveyance, or discharge components (other than the same background pumping considered in Alternative 1) and, therefore, does not address contaminant migration.

Monitoring

For cost estimation and evaluation of the alternative, it was assumed that 16 new monitoring wells would be installed: 4 new wells downgradient of mid-valley in the intermediate and deep zones, and 12 new wells near the mouth of the valley in the shallow and intermediate zones.

8.3 Alternative 3 - Ground-water Control in the Shallow and Intermediate Zones at the Mouth of the Valley

Alternative 3 is containment of contaminated ground water in the shallow and intermediate zones at the mouth of the valley. For the purposes of cost estimation and evaluation, extraction and treatment systems were assumed to be implemented, though the actual remedy may differ. The remedy implemented will need to meet the performance criteria specified in Section 10 this ROD. Components of this alternative are as follows.

Extraction

The ground-water extraction in Alternative 3 includes four wells in each zone (shallow and intermediate). The total extraction rates from the shallow and intermediate zones are 700 and 1,000 gallons per minute (gpm), respectively, for a total flow of 1,700 gpm. The actual extraction well locations and rates will be determined during remedial design based on additional evaluation of the extent of contamination during the remedial design investigation.

Treatment

Extracted ground water will be treated by either air stripping with offgas treatment or liquid-phase carbon adsorption to remove VOCs prior to discharge. For cost estimation purposes, this alternative assumes a treatment system using air stripping with adsorption of VOCs in offgas. Construction of a single 1,700-gpm, centralized treatment plant near the mouth extraction system is assumed for this alternative.

If water is discharged to a municipal water supply system, treatment to reduce concentrations of total dissolved solids (TDS) and nitrate would probably be required for shallow ground water. The assumed level of treatment for inorganic constituents, if

required, would be to the MCL or secondary drinking water standard, as applicable. In the FS, a membrane separation process was assumed for discharge to a municipal water supply system.

Conveyance

Treated ground water may be discharged to Puente Creek or other surface waters or provided to a municipal supply system. Preliminary evaluations that PVSC conducted indicate that there are nearby water distribution systems operated by San Gabriel Valley Water Company, Suburban Water Systems, and the City of Industry. These purveyors have indicated that the water demands for any of these nearby systems substantially exceed the ground-water extraction rate assumed for this alternative.

Discharge

As described above, treated water may be either discharged to surface waters or to a water supply line for municipal use.

Monitoring

Alternative 3 also includes a monitoring system to ensure compliance with RAOs and performance criteria in the shallow, intermediate, and deep zones at mid-valley and the mouth of the valley. In addition, selected monitoring wells may provide an early warning system for extraction and treatment systems. A total of 12 new wells was assumed: 4 new wells downgradient of mid-valley in the intermediate and deep zones, and 8 new wells near the mouth of the valley in the shallow and intermediate zones. Implementation of this monitoring program during the initial stages of the remedial design will help to define design parameters.

8.4 Alternative 4 - Ground-water Control in the Shallow and Intermediate Zones at the Mouth of the Valley and in the Intermediate Zone at Mid-Valley

Alternative 4 includes all of the components described for Alternative 3, plus ground-water extraction and treatment components in the intermediate zone at mid-valley. The additional extraction is intended to address migration of contamination in the intermediate zones. The remedial action components described below have been defined only for the purposes of cost estimation and evaluation. If Alternative 4 is selected, the actual remedy implemented will need to meet the performance criteria identified in this ROD, and could therefore have different components than those assumed for the FS.

Extraction

As stated above, Alternative 4 includes the same mouth of the valley pumping system as described for Alternative 3. Installation of four extraction wells (screened from 200 to 250 feet below ground surface (bgs)) has been assumed along the west side of Hacienda Boulevard, with one well south of San Jose Creek and three wells north of the creek. Three of the wells have an extraction rate of 150 gpm each. The fourth well provides an extraction

rate of 100 gpm, yielding a total extraction rate of 550 gpm from the intermediate zone at mid-valley.

Treatment

Alternative 4 includes the same treatment processes and mouth of the valley treatment plant described for Alternative 3. Alternative 4 assumes that a separate, 550-gpm, mid-valley treatment plant will be built to treat ground water extracted from the mid-valley system. If it appears to be more cost-effective, a single treatment plant system could be designed to treat water extracted from both the mouth of the valley and mid-valley systems. If discharge to San Jose Creek is selected as the discharge option, a treatment plant located closer to San Jose Creek would reduce treated water conveyance costs.

Conveyance

The conveyance system includes untreated water pipelines from the extraction wells to the treatment plant and treated water pipeline alignments to the San Jose Creek and potential connection points to municipal water supply system lines. Several potential connection points to water supply systems exist in the treatment plant vicinity. Suburban Water Systems has a 16-inch-diameter pipeline adjacent to Hacienda Boulevard. The City of Industry operates a 16-inch-diameter pipeline adjacent to Valley Boulevard. The San Gabriel Valley Water Company operates a 14-inch pipeline that extends along the south side of San Jose Creek, and also has a 12-inch-diameter pipeline along Valley Boulevard west of Proctor Avenue. Discharge to nearby San Jose Creek is also an option.

Discharge

As discussed above, water may be either discharged to surface waters or to a water supply line for municipal use.

Monitoring

Alternative 4 includes the monitoring system to monitor compliance with RAOs and performance criteria in the shallow, intermediate, and deep zones at mid-valley and the mouth of the valley. A total of 13 new wells is assumed: 5 new wells in the mid-valley area (intermediate and deep zones) and 8 new wells near the mouth of the valley (shallow and intermediate zones). Implementation of this monitoring program during the initial stages of the remedial design will help to define design parameters.

9 Summary of Comparative Analysis of Alternatives

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The four remedial alternatives described in Section 8 are compared to the Superfund nine evaluation criteria listed in 40 CFR Section 300.430. The comparative analysis provides the basis for determining which alternative presents the best balance of the criteria. The first two evaluation criteria are considered *threshold criteria* that the selected remedial action must meet. The five *primary balancing criteria* are balanced to achieve the best overall solution. The two *modifying criteria*, state and community acceptance, are also considered in remedy selection.

Threshold Criteria

- **Overall Protection of Human Health and the Environment** addresses whether each alternative provides adequate protection of human health and the environment, and describes how risks posed through each exposure pathway are eliminated, reduced, or controlled through treatment, engineering controls, and/or institutional controls.
- **Compliance with ARARs** addresses the requirement of Section 121(d) of CERCLA that remedial actions at least attain legally applicable or relevant and appropriate federal and state requirements, standards, criteria, and limitations, which are collectively referred to as "ARARs," unless such ARARs are waived under CERCLA Section 121(d)(4).

Primary Balancing Criteria

- **Long-term Effectiveness and Permanence** refers to the ability of a remedy to maintain reliable protection of human health and the environment over time.
- **Reduction of Toxicity, Mobility, or Volume Through Treatment** refers to the anticipated performance of the treatment technologies that may be included as part of a remedy.
- **Short-term Effectiveness** addresses the period of time needed to implement the remedy and any adverse impacts that may be posed to workers and the community during construction and operation of the remedy until cleanup goals are achieved.
- **Implementability** addresses the technical and administrative feasibility of a remedy from design through construction and operation. Factors such as availability of services and materials, administrative feasibility, and coordination with other governmental entities are also considered.
- **Cost** evaluates the estimated capital, operation and maintenance (O&M), and indirect costs of each alternative in comparison to other equally protective alternatives.

Modifying Criteria

- **State Acceptance** indicates whether the state agrees with, opposes, or has concerns about the preferred alternative.
- **Community Acceptance** includes determining which components of the alternatives interested persons in the community support, have reservations about, or oppose.

This section describes each threshold and primary balancing criterion, evaluates each alternative in relation to each criterion, and identifies advantages and disadvantages among the alternatives in relation to each criterion. Figure 4 presents a comparative matrix in which the four alternatives are ranked for each of the evaluation criterion. The details of how the rankings have been assigned for each criterion are provided below.

9.1 Overall Protection of Human Health and the Environment

The NCP requires that all alternatives be assessed to determine whether they can adequately protect human health and the environment from unacceptable risks from site contamination. These risks can be mitigated by eliminating, reducing, or controlling exposure to hazardous substances, pollutants, or contaminants.

9.1.1 Overall Protection of Human Health and the Environment: Evaluation of Alternatives

Alternatives 1 and 2 do not provide protection of human health and the environment. These two alternatives allow migration of VOC contamination to continue. Alternative 2 would include ground-water monitoring to provide early warning of expected increases in contaminant concentrations that may interfere with the ability of area water purveyors to supply ground water meeting MCLs.

Alternatives 3 and 4 provide protection of human health and the environment by inhibiting contaminant migration, thereby protecting future uses of less contaminated and uncontaminated ground water. Alternatives 3 and 4 would also reduce the toxicity, mobility, and volume of the contaminants and remove significant contaminant mass from the aquifer. Alternative 4 includes additional extraction in the mid-valley intermediate zone that is not assumed in Alternative 3. This extraction would provide additional protection for the intermediate and deep zone downgradient of mid-valley and remove additional contaminant mass.

Alternatives 1 and 2 are assigned low rankings in Figure 4 because they fail to provide migration control. Alternatives 3 and 4 are assigned high rankings because they meet this threshold requirement of protecting human health and the environment. Alternative 4 is ranked slightly higher than Alternative 3 because of the additional migration control and mass removal at mid-valley.

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9.2 Compliance with ARARs

This evaluation criterion is also a threshold requirement and is used to determine if each alternative would attain federal and state ARARs, or whether there is adequate justification for invoking waivers for specific ARARs.

9.2.1 Compliance with ARARs: Evaluation of Alternatives

Alternatives 1 and 2 do not meet ARARs. Both alternatives allow for continued uncontrolled migration of contaminants, at levels exceeding MCLs, into production wells located at the mouth of Puente Valley. Neither alternative ensures that water produced from these wells will meet drinking water ARARs. The continued migration of contaminants under Alternatives 1 and 2 would not meet the chemical-specific ARARs established for the uncontaminated ground water in the intermediate zone.

Alternatives 3 and 4 meet the ARARs described in Section 11 of this ROD. Both of the retained treatment technologies are technically capable of meeting ARARs for VOCs in the extracted ground water. Since this is an interim remedial action to contain contamination, EPA has not established chemical-specific ARARs for the contaminated portions of the aquifer.

Alternatives 1 and 2 are assigned low rankings because they do not meet this threshold requirement of complying with ARARs. Alternatives 3 and 4 are assigned high rankings because they do comply with ARARs. There are no significant differences in the ability of Alternatives 3 and 4 to comply with ARARs.

9.3 Long-Term Effectiveness

This evaluation criterion assesses the extent to which each remedial alternative reduces risk after the remedial action objectives are met. Residual risk can result from exposure to untreated waste or treatment residuals. The magnitude of the risk depends on the magnitude of the wastes and the adequacy and reliability of controls, if any, that are used to manage untreated waste and treatment residuals. For this interim action, untreated waste refers to any contaminated ground water not removed from the aquifer.

The performance of the alternatives in relation to this criterion is evaluated primarily by estimating the extent to which each alternative prevents the migration of contamination into less contaminated and uncontaminated areas. Preventing or reducing contaminant migration reduces contaminant concentrations in downgradient areas, reducing risk by reducing the likelihood of exposure. Performance was evaluated using ground-water modelling. Because this is an interim remedy to contain contaminant migration, untreated wastes will remain in the ground water.

9.3.1 Long-Term Effectiveness and Permanence: Evaluation of Alternatives

Ground-water modelling results presented in the FS suggest Alternatives 1 and 2 do not contain contaminant migration in either the shallow or intermediate zones in the PVOU. Alternatives 3 and 4 are effective at containing migration of contamination at the mouth of the valley in the shallow and intermediate zones. Modelling results indicate that only

Alternative 4 is effective at containing intermediate zone migration at mid-valley, although Alternative 3 provides a measure of protection by containing contamination in the intermediate zone at the mouth of the valley.

Alternatives 1 and 2 do not prevent contaminant migration in either the shallow or the intermediate zones and, therefore, are assigned a low ranking in Figure 4 because they do not provide significant long-term effectiveness and permanence. Alternatives 3 and 4 are assigned a high ranking because they do contain contaminant migration. Alternative 4 is ranked slightly higher than Alternative 3 because of the additional contaminant migration control provided at mid-valley.

9.4 Reduction of Toxicity, Mobility, and Volume Through Treatment

This criterion addresses the preference, as stated in the NCP, for selecting remedial actions employing treatment technologies that permanently and significantly reduce toxicity, mobility, or volume of the hazardous substances as a principal element of the action. This preference is satisfied when treatment is used to reduce the principal threats at a site through destruction of toxic contaminants, reduction of total mass of toxic contaminants, irreversible reduction in contaminant mobility, or reduction of total volume of contaminated media.

This evaluation focuses on the following factors for each remedial alternative:

- Whether the alternative satisfies the statutory preference for treatment as a principal element
- The treatment process employed, including the amount of hazardous materials that will be destroyed or treated and the degree of expected reduction in toxicity, mobility, or volume
- The degree to which treatment is irreversible
- The type and quantity of treatment residuals that will remain following treatment

9.4.1 Reduction of Toxicity, Mobility, or Volume Through Treatment: Evaluation of Alternatives

Alternatives 1 and 2 do not provide any reduction in toxicity, mobility, or volume and do not satisfy the statutory preference for treatment. Alternatives 3 and 4 satisfy the statutory preference for treatment. Both of these alternatives would significantly reduce the volume and mobility of contamination by inhibiting further contaminant migration. The two treatment technologies retained for Alternatives 3 and 4, air stripping with offgas controls and liquid-phase carbon adsorption, would irreversibly reduce the toxicity and volume of contaminants in the extracted ground water and result in an effluent stream that meets drinking water standards for VOCs. Both treatment technologies would result in the destruction of VOCs if the granular activated carbon is regenerated. These technologies would create residuals if used carbon is not regenerated.

Alternative 3 is estimated to provide removal of 15,200 pounds of VOCs over a 30-year period of operation. Alternative 4 is estimated to provide removal of 25,000 pounds of VOCs over a 30-year period of operation. The increase in mass removal for Alternative 4 over Alternative 3 is estimated to be 9,800 pounds. The actual operation of the extraction and treatment systems in Alternatives 3 and 4 could yield lower or higher values.

Alternatives 1 and 2 are assigned a low ranking in Figure 4 because they do not satisfy the statutory preference for treatment and do not reduce the toxicity, mobility, or volume of contaminants. Alternatives 3 and 4 are assigned a high ranking because they do satisfy the statutory preference for treatment and significantly reduce the toxicity, mobility, and volume of contaminants by inhibiting contaminant migration and producing an effluent stream that meets MCLs. Alternative 4 is ranked slightly higher because of the additional contaminant migration control and mass removal in the mid-valley area incorporated into this alternative.

9.5 Short-Term Effectiveness

This criterion evaluates the effects of each remedial alternative on human health and the environment during the construction and implementation phase until remedial action objectives are met. The following factors are addressed for each alternative:

- **Protection of workers and the community during construction and implementation phases.** This factor qualitatively examines risk that results from implementation of the proposed remedial action and the effectiveness and reliability of protective measures.
- **Environmental impacts.** This factor addresses the potential adverse environmental impacts that may result from the construction and implementation of an alternative. This factor also evaluates the reliability of the available mitigation measures to prevent or reduce potential impacts.
- **Time until RAOs are achieved.**

9.5.1 Short-Term Effectiveness: Evaluation of Alternatives

Alternative 1 is not evaluated for this criterion because there is no construction or implementation phase. None of the alternatives pose unmitigable risks to the community during construction and implementation. Nor do any of the alternatives pose unmitigable risks to workers beyond general construction hazards associated with large construction projects. No unmitigable negative environmental impacts are anticipated in the areas in which facilities would be constructed.

For Alternative 2, the RAOs would not be met as long as contaminant migration continues. Additional investigation is required to assess the current magnitude of contaminant migration in portions of the PVOU area. However, the modelling for Alternatives 1 and 2 suggests that contaminant migration is likely to continue for a considerable length of time. The RAOs would be met for Alternatives 3 and 4 as soon as the ground-water extraction and treatment components begin operation.

The time until RAOs are achieved (i.e., system startup) for Alternatives 3 and 4 is anticipated to be within approximately 3 to 5 years. However, there are several

implementability issues (described in Section 9.6) that could impact this time. In addition, implementation of these alternatives could be complicated by the need to obtain sites for remedy components (wells and treatment facilities) and the need to construct conveyance systems in heavily developed areas. Ground-water treatment may create hazardous waste residuals (e.g., spent carbon).

Alternatives 3 and 4 are assigned a high ranking because there are no unmitigable risks to the community, workers, or the environment during construction and implementation. There are no significant differences between the two alternatives, although Alternative 4 will likely take slightly longer to meet RAOs because of the additional construction at mid-valley. Although there are no unmitigable risks associated with construction and implementation of Alternative 2 and there is less overall construction, Alternative 2 is assigned a medium ranking because RAOs are never achieved.

9.6 Implementability

This criterion addresses the technical and administrative feasibility of implementing an alternative and the availability of various services and materials required during its implementation. The following factors are considered:

- **Technical Feasibility**
 - Ability to construct and operate: addresses any technical difficulties and unknowns associated with construction or operation of the technology
 - Reliability of technology: focuses on the likelihood that technical problems associated with implementation will lead to schedule delays
 - Ease of undertaking additional remedial action: includes a discussion of what, if any, future remedial actions may need to be undertaken and how the remedial action would interfere with, or facilitate, the implementation of future actions
- **Administrative Feasibility**
 - Coordination with other agencies, including the need for agreements with parties other than EPA required for construction and operation of the remedy
- **Availability of Services and Materials**
 - Availability of necessary equipment, specialists, and provisions to assure any necessary resources
 - Availability of services and materials, plus the potential for obtaining competitive bids

9.6.1 Implementability: Evaluation of Alternatives

Alternative 1 is not evaluated for this criterion because no action is implemented. As described above, the implementability evaluation incorporates several factors. Each of these is discussed separately in the following text.

Technical Feasibility: Ability to Construct and Operate. The extraction, treatment, and conveyance technologies included in Alternatives 3 and 4 and the monitoring technologies included in all three remedial action alternatives are widely used. No significant difficulties are expected in construction and operation of these technologies.

Technical Feasibility: Reliability of Technology. The extraction, treatment, conveyance, and monitoring technologies in Alternatives 2, 3, and 4 are generally known to be proven and reliable.

Technical Feasibility: Ease of Undertaking Additional Remedial Actions. The alternatives would not interfere with the implementation of future response actions to further contain contamination or restore ground water in the PVOU area.

Administrative Feasibility. There are not likely to be any significant administrative feasibility issues associated with implementation of Alternative 2, other than obtaining access agreements for monitoring well installation. Implementation of Alternatives 3 and 4 would require acquisition of property and/or easements for the construction of extraction wells, treatment facilities, and conveyance facilities.

In addition, implementing Alternatives 3 or 4 would require resolution of the following administrative issues associated with ground-water extraction and discharge of treated water to local water purveyors or to the Puente Creek:

- Agreements would need to be made with the Watermaster or with a water purveyor to account for extraction from the basin by the parties implementing the selected remedy because these parties do not have water rights.
- Agreements would need to be reached with water purveyors that would receive treated water from the ground-water treatment facilities specifying the amount of water each purveyor would accept; the treated water delivery location; responsibility for any necessary capital improvements to purveyor systems; and to determine operational, liability, financial, and other arrangements.
- Water purveyors would need to obtain approval for modifications to their water supply permits.

Availability of Services and Materials. Implementation of Alternatives 3 and 4 would require fabrication of treatment plant equipment. Required services and materials are believed to be available, including qualified contractors for construction and operation of the necessary facilities.

Alternative 2 is assigned a high ranking in Figure 4 because there are no significant issues that could impact implementability of this monitoring-only alternative. Alternatives 3 and 4 are assigned a medium ranking because of the administrative issues associated with ground-water extraction and treated water discharge. Because the anticipated flow rates are not high (less than 2,500 gpm), it is expected that these administrative issues will not result in extensive delays in project implementation.

The technical feasibility of Alternatives 3 and 4 is similar, although the more complex conveyance and treatment facilities required in Alternative 4 are more likely to lead to schedule delays.

9.7 Cost

This criterion addresses the total cost of each alternative. This includes short- and long-term costs, and capital and O&M costs. The following cost elements are considered for each alternative:

- **Capital Cost.** Direct capital cost includes the cost of construction, labor, equipment, land, site development, and service. Indirect capital cost includes engineering fees, license and permit cost, startup and shakedown costs, and contingencies.
- **O&M Cost.** Annual O&M cost includes operating labor cost, maintenance materials and labor, pumping and treatment energy costs, monitoring costs, and all other postconstruction costs necessary to ensure continuous effective operation of the alternative.
- **Total Present Worth.** The total present worth of each alternative is calculated at an interest rate of 5 percent and a time period of 30 years. Total present worth for each alternative includes capital cost plus the present worth of the annual O&M costs.
- **Cost per Pound of Mass Removed.** The cost per pound of VOC mass removed is calculated for each alternative that includes ground-water extraction and treatment.

The cost estimates are considered order-of-magnitude level estimates (i.e., the cost estimates have an expected accuracy of +50 to -30 percent). The assumption of a 30-year operating period is based on EPA guidance and does not reflect any specific finding regarding the duration of the remedy.

9.7.1 Cost: Evaluation of Alternatives

Although there is no cost presented for the no-action alternative (Alternative 1), there have been and would continue to be substantial financial impacts on local water purveyors or their rate payers because of the continued migration of contamination to their production wells. Table 4 summarizes the estimated costs for Alternatives 2 through 4, respectively.

9.7.2 Cost: Comparison of Alternatives

Table 4 compares the cost of each alternative for capital costs, long-term O&M costs, and present worth. The short-term capital costs range from \$2,344,000 for Alternative 2 to \$11,751,000 for Alternative 4. The annual O&M costs range from \$360,000 for Alternative 2 to \$1,634,000 for Alternative 4.

9.8 State Acceptance

The State of California has provided comments and feedback to EPA throughout the RI/FS process for the PVOU. In a letter dated September 24, 1998, the California Department of Toxic Substance Control (DTSC), as lead agency for the state, concurred with EPA's selected remedy. In addition, the RWQCB approved EPA's selected remedy at a meeting held on September 14, 1998.

9.9 Community Acceptance

EPA received written comments from three individuals and several organizations or agencies on the Proposed Plan for this interim action at the PVOU. In addition, EPA received limited oral comments and questions at the public meeting held in January 1998 to discuss EPA's plans. EPA responded directly to the oral questions and comments at the public meeting. The entire transcript for the public meeting is included in the Responsiveness Summary in Part II of this ROD (Volume 2). All of the written comments, along with EPA's responses to them, are also presented in the Responsiveness Summary.

Several commenters expressed support for EPA's proposed remedy. Some commenters did not believe that the remedy was necessary or supported by the information that has been collected to date. EPA has determined that the preferred alternative presented in the Proposed Plan represents the most appropriate remedy for the ROD site. None of the comments received suggested a change to the overall remedy that EPA selected.

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10 Selected Remedy

After considering CERCLA's statutory requirements, the detailed comparison of the alternatives using the nine criteria, and public comments, EPA, in consultation with the State of California, has determined that the most appropriate remedy for this site is Alternative 3: ground-water control in the shallow and intermediate zones at the mouth of Puente Valley. This alternative meets the two NCP threshold evaluation criteria; overall protection of human health and the environment and compliance with ARARs, and provides the best balance of the remaining Superfund evaluation criteria. EPA expects that this interim remedy will provide the basis for the final remedy for the PVOU.

Alternative 3 will be implemented using a performance-based approach. The performance-based approach specifies criteria ("performance criteria") that must be met while allowing flexibility in implementation. The performance criteria are designed to attain the RAOs for the PVOU and are described below.

10.1 Performance Criteria

Performance Criterion for the Shallow Zone:

The remedial action shall prevent ground water in the shallow zone with VOC contamination above 10 times the ARARs listed in Table 1 from migrating beyond its current lateral and vertical extent as described in the RI/FS for the PVOU.

Compliance with this criterion will be monitored at wells described as follows:

- Located laterally and vertically downgradient of contamination exceeding 10 times the relevant ARAR, but within areas in which there is detectable VOC contamination in the shallow zone
- Completed with screen lengths generally of 20 feet or less between the water table and 150 feet bgs. Longer screened intervals may be appropriate in limited situations and will be evaluated on a case-by-case basis

Extracted ground water will be treated by air stripping (with off-gas controls) or liquid-phase carbon adsorption. If alternative treatment technologies are identified, EPA will evaluate the alternative technologies in accordance with the criteria specified in 40 CFR Section 300.430 during remedial design.

Performance Criterion for the Intermediate Zone

The remedial action shall provide sufficient hydraulic control to prevent ground water in the intermediate zone with VOC contamination above ARARs listed in Table 1 from migrating beyond the B7 Well Field Area. The B7 Well Field Area is defined as the area encompassed by (1) the wells listed in Table 5 and (2) the current downgradient extent of contamination above ARARs in the intermediate zone, in the vicinity of the wells located in Table 5.

Compliance with this criterion will be monitored at compliance wells described as follows:

- Located within 2,000 feet of either (1) the current extent of ground water contaminated with any VOC exceeding its ARAR or (2) a production well listed in Table 5, whichever represents the nearest margin of the B7 Well Field Area
- Located along the northern, northwestern, and western margins of the B7 Well Field Area
- Completed with screen lengths of 20 feet or less within the intermediate zone. Larger screened intervals may be appropriate in limited situations and will be evaluated on a case-by-case basis
- Extracted ground water will be treated by air stripping (with off-gas controls) or liquid-phase carbon adsorption. If alternative treatment technologies are identified, EPA will evaluate the alternative in accordance with the criteria specified in 40 CFR Section 300.430 during remedial design.

Implementation of the remedial action cannot result in any adverse effects (i.e., increases in migration of contamination) to production wells that are not part of the remedial action. In addition, the remedial action must provide adequate capture of contamination above ARARs without relying on the effects of wells that are not part of the remedial action.

Compliance with Performance Criteria

Compliance with the performance criteria will be confirmed by quarterly sampling at compliance wells. Over time, if it can be demonstrated, based on historical monitoring data, that concentrations are unlikely to exceed the performance criteria in the short term, monitoring intervals may be lengthened. If it appears, based on trends in monitoring data, that concentrations may exceed the performance criteria, monitoring intervals may be shortened.

Concentrations at compliance wells will be used as an absolute criterion to demonstrate compliance. EPA expects that ground-water containment actions will be implemented sufficiently upgradient of these wells to provide enough of a buffer zone to allow additional actions to be taken, if necessary, to ensure compliance. EPA also anticipates that additional monitoring wells will be installed, or existing wells within this buffer zone will be used to provide an early warning system, and therefore provide sufficient time to address and prevent noncompliance.

Imminent exceedence of the performance criteria at compliance wells indicates that ground-water contamination is migrating, and hydraulic containment is required. Any actual or imminent exceedence of the performance criteria at the compliance wells will require ground-water extraction and treatment to achieve hydraulic containment. Actual exceedence of performance criteria at compliance wells will result in the initiation of enforcement actions.

Supplemental Explanation of Performance Criteria

The following paragraphs provide additional explanation of the performance criteria, their meaning and objectives to help clarify the intent of the criteria.

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The "Shallow" and "Intermediate" Zones

The shallow zone generally encompasses the upper 100 feet of the saturated aquifer, including the interval between the water table and approximately 150 feet bgs. The intermediate zone generally includes the relatively coarse-grained interval between the shallow zone and deeper portions of the aquifer used for ground-water production. Both terms are used in a manner consistent with their usage in the Puente Valley Feasibility Study (EPA, 1997) and Remedial Investigation Report (CDM, 1997).

The "shallow" and "intermediate" zones are terms intended to describe general horizons within the aquifer(s) underlying the PVOU. During the course of the RI and development of the FS, the complex stratigraphy was simplified with generalizing assumptions about vertical intervals that appear to have similar characteristics throughout the area. However, actual subsurface conditions are not accurately described by terms that imply a well-layered system. The alluvial materials that underlie the PVOU are very heterogeneous, and are made up of interfingering lenses of variable hydraulic properties.

The shallow zone represents the upper portion of the saturated sediments at and under the water table. Contaminant concentrations, transport rates, and aquifer materials in the shallow zone are variable. Remediation of migrating contamination in the shallow zone requires careful analysis of this variability, and an adequate understanding of the extent, nature, and sources of contamination.

The intermediate zone is described as the "663" zone in portions of the RI and FS. This term is based on a well (MW 6-63) completed in a zone of relatively high permeability, and containing elevated levels of contamination. A similar zone can be generally correlated in well logs throughout much of the PVOU. Contamination appears to preferentially travel within this zone, as concentrations within it are typically higher than in horizons above and below it. Containment of contamination within the intermediate zone is considered essential to avoid future adverse impacts to deeper zones that provide water to drinking water wells. Water from the intermediate zone itself provides a small portion of the drinking water pumped from production wells at the mouth of the Puente Valley.

Compliance Wells

Compliance wells in the shallow zone will be located to ensure adequate monitoring of contaminant migration both laterally and vertically. Wells must provide sufficient information to assess whether the remedial action is preventing further migration of contaminants. The number, location, and monitoring of these wells must ensure that contamination is not spreading laterally away from areas that are already contaminated, or vertically into deeper zones.

Compliance wells in the intermediate zone must be located within 2,000 feet of the margins of the B7 Well Field Area, yet within areas of detectable contamination, as described in the performance criteria, and further described below. The intent of locating these wells in this manner is to provide compliance points that are sufficiently distant from existing contamination above MCLs to provide enough time to ensure that additional actions can be taken before threshold concentrations are exceeded. The wells must also be sufficient in number and adequately located to ensure that contamination above MCLs does not migrate away from the B7 Well Field Area.

Locations of all compliance wells are subject to EPA approval. Well screens will generally be of 20 feet or less. Concentrations in wells vary as a function of screen length because of blending. Therefore, wells with screens longer than 20 feet are not generally considered appropriate for monitoring compliance. However, based on conditions encountered during installation of these wells, it may be appropriate to consider longer screens to ensure monitoring of several high-permeability zones. Installation of wells with screens exceeding 20 feet will be considered on a case-by-case basis subject to EPA approval.

B7 Well Field Area

The B7 Well Field contains production wells that the San Gabriel Valley Water Company and the Suburban Water System own. The current extent of intermediate zone groundwater contamination extends into the B7 Well Field. The intermediate zone objective is to ensure that contamination does not migrate beyond the B7 Well Field Area. For the purposes of this remedial action, the B7 Well Field Area is defined as: (1) the wells listed in Table 5 and (2) the downgradient extent of contamination above MCLs in the vicinity of the wells listed in Table 5. The intent of defining the zone in this manner is to provide an adequate basis for designing a remedial action that does not allow contamination to spread away from its current extent. The B7 Well Field Area is considered to be a generally elliptical or circular area that encompasses both the B7 wells and the downgradient extent of contamination.

The FS identifies two approaches that should be able to accomplish the intermediate zone objectives. The first relies exclusively on installation of a new set of extraction wells upgradient of the production wells. These new wells must provide sufficient hydraulic control to capture contamination migrating into the production field. The second approach incorporates the production wells into the remedial action. If this approach is used, it must be demonstrated that pumping from the production wells alone, or in combination with new wells, provides sufficient hydraulic control. For the production wells to be considered part of the remedial action, the responsible parties will have to provide acceptable assurances to EPA that the wells will operate in a manner that ensures compliance with the performance criteria. If other approaches for achieving containment are identified, EPA will evaluate those methods in accordance with the criteria specified in 40 CFR Section 300.430.

For any remedial approach, compliance will be monitored at wells located along the margins of the B7 Well Field Area. If a new extraction system is used, monitoring wells must also be placed to measure the effectiveness of the system preventing migration of contaminants into the B7 Well Field. Any remedial action selected must, by itself, provide sufficient capture and be monitored to ensure that the performance criteria are not exceeded.

Adverse Effects

The term "adverse effects" is included in the performance criteria to prevent the design and installation of a hydraulic control system that maintains concentrations at compliance wells below specified thresholds at the expense of protecting production wells that are not part of the remedy. The principal adverse effect of concern is implementation of the remedial action in a manner that results in increased contaminant concentrations in wells that are not part of the remedial action. This requirement prevents, for example, the installation of new

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extraction wells immediately upgradient of the compliance wells and downgradient of production wells that are not part of the remedial action. The remedial action must be protective of the environment and not result in adverse effects, either on production wells, or on the overall extent of contamination.

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11 Applicable or Relevant and Appropriate Requirements (ARARs)

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Section 121(d) of CERCLA, 42 U.S.C. § 9621(d) requires that remedial actions at CERCLA sites attain (or justify the waiver of) any federal or state environmental standards, requirements, criteria, or limitations that are determined to be legally applicable or relevant and appropriate. These applicable or relevant and appropriate requirements are referred to as "ARARs." Federal ARARs may include requirements promulgated under any federal environmental laws. State ARARs may only include promulgated, enforceable environmental or facility-siting laws of general application that are more stringent or broader in scope than federal requirements and that are identified by the state in a timely manner.

An ARAR may be either "applicable," or "relevant and appropriate," but not both. If there is no specific federal or state ARAR for a particular chemical or remedial action, or if the existing ARARs are not considered sufficiently protective, then other guidance or criteria to be considered (TBCs) may be identified and used to ensure the protection of public health and the environment. The NCP, 40 C.F.R. Part 300, defines "applicable," "relevant and appropriate," and "to be considered" as follows:

- **Applicable requirements** are those cleanup standards, standards of control, or other substantive requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstances found at a CERCLA site. Only those state standards that are identified by a state in a timely manner and that are more stringent than federal requirements may be applicable.
- **Relevant and appropriate requirements** are those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws that, while not "applicable" to a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site, address problems or situations sufficiently similar to those encountered at the CERCLA site that their use is well suited to the particular site. Only those state standards that are identified in a timely manner and that are more stringent than federal requirements may be relevant and appropriate.
- **TBCs** consist of advisories, criteria, or guidance that EPA, other federal agencies, or states developed that may be useful in developing CERCLA remedies. The TBC values and guidelines may be used as EPA deems appropriate.

ARARs are identified on a site-specific basis from information about the chemicals at the site, the remedial actions contemplated, the physical characteristics of the site, and other appropriate factors. ARARs include only substantive, not administrative, requirements, and pertain only to onsite activities. Offsite activities must comply with all applicable federal,

state, and local laws, including both substantive and administrative requirements, that are in effect when the activity takes place. There are three general categories of ARARs:

- **Chemical-specific ARARs** are health- or risk-based concentration limits, numerical values, or methodologies for various environmental media (i.e., ground water, surface water, air, and soil) that are established for a specific chemical that may be present in a specific media at the site, or that may be discharged to the site during remedial activities. These ARARs set limits on concentrations of specific hazardous substances, pollutants, and contaminants in the environment. Examples of this type of ARAR include state and federal drinking water standards.
- **Location-specific ARARs** set restrictions on certain types of activities based on site characteristics. Federal and state location-specific ARARs are restrictions placed on the concentration of a contaminant or the activities to be conducted because they are in a specific location. Examples of special locations possibly requiring ARARs may include floodplains, wetlands, historic places, and sensitive ecosystems or habitats.
- **Action-specific ARARs** are technology- or activity-based requirements that are triggered by the type of remedial activities under consideration. Examples of this type of ARAR are RCRA regulations for waste treatment, storage, or disposal.

EPA has evaluated and identified the ARARs for the selected remedy in accordance with CERCLA, the NCP, and EPA guidance, including the *CERCLA Compliance with Other Laws Manual, Part I (Interim Final)*, OSWER Directive 9234.1-01 (EPA, 1988a) and *CERCLA Compliance with Other Laws Manual, Part II*, OSWER Directive 9234.1-02 (EPA, 1989).

11.1 Chemical-specific ARARs

The chemicals of potential concern for the PVOU are VOCs that were detected in ground water in the PVOU. Table 1 lists these VOCs and their chemical-specific ARARs.

11.1.1 Federal Drinking Water Standards

EPA has established MCLs, 40 CFR, Part 141, under the Safe Drinking Water Act (SDWA), 42 U.S.C. §§ 300f-j, to protect public health from contaminants that may be found in drinking water sources. MCLs are applicable at the tap for water that is delivered directly to 25 or more people or to 15 or more service connections.

Under the SDWA, EPA has also designated Maximum Contaminant Level Goals (MCLGs), 40 C.F.R. Part 141, which are health-based goals that may be more stringent than MCLs. MCLGs are set at levels, including an adequate margin of safety, where no known or anticipated adverse health effects would occur. MCLGs greater than zero are relevant and appropriate where multiple contaminants in ground water or multiple pathways of exposure present unacceptable health risks (EPA, 1988b). One chemical detected in the PVOU ground water, 1,1,2-trichloroethane, has an MCLG that is more stringent than its MCL.

Under Section 300.430(f)(5) of the NCP, remedial actions must generally attain MCLs and nonzero MCLGs if the contaminated water is a current or potential source of drinking water. The 1995 Water Quality Control Plan for the Los Angeles Region (Basin Plan)

designates all of the contaminated ground water in the PVOU as current and potential sources of drinking water. However, since this ROD selects an interim remedial action to contain contaminant migration, no final cleanup standards are established for the restoration of ground water. Final cleanup standards will be established in a Final ROD. For this Interim ROD, EPA has determined that the federal MCLs and nonzero MCLGs listed in Table 1 are ARARs for any ground water that is treated and used for domestic, municipal, industrial, or agricultural purposes, and for any ground water that is discharged to the environment. In addition, these MCLs and MCLGs are ARARs for currently uncontaminated ground water in the intermediate zone downgradient from the B7 Well Field Area (EPA, 1988a).

If treated ground water is to be delivered into a public water supply, all legal requirements for drinking water in existence at the time that the water is served will have to be met because EPA considers the service of water to the public to be an offsite activity.

11.1.2 California Drinking Water Standards

California has established state MCLs for sources of public drinking water, under the California Safe Drinking Water Act of 1976, Health and Safety Code (H&SC) §§ 4010.1 and 4026(c), California Code of Regulations (CCR) Title 22, §§ 64431 and 64444. Some state MCLs are more stringent than the corresponding federal MCLs. EPA has determined that the more stringent state MCLs are relevant and appropriate for the PVOU. There are also some chemicals that lack federal MCLs. Where state MCLs exist for chemicals that lack federal MCLs, EPA has determined that the state MCLs are relevant and appropriate for the PVOU. State MCLs apply to remedial actions in the PVOU in the same manner as federal MCLs. Table 1 identifies the state MCLs that are ARARs for this remedial action.

11.2 Location-specific ARARs

This ROD specifies performance criteria for the remedy. As such, the locations of remediation facilities (e.g., wells, treatment plant, and pipelines) are not specifically identified herein. Locations of remediation facilities will be determined during the remedial design, and will conform to the location-specific ARARs identified below.

11.2.1 Location Standards for TSD Facilities

California Code of Regulations, Title 22, Section 66264.18 establishes location standards for Hazardous Waste Treatment, Storage, and Disposal Facilities (TSDFs). Subsection 66264.18(a) prohibits the placement of TSDFs within 200 feet of a fault displaced during the Holocene epoch. Subsection 66264.18(b) requires that TSDFs located within a 100-year floodplain be capable of withstanding a 100-year flood. These standards are applicable to the construction of any new ground-water extraction and treatment facilities used as part of this remedial action.

11.2.2 Endangered Species Act

The Endangered Species Act, 15 U.S.C. §§ 1531-1544, and implementing regulations, 40 C.F.R. § 6.302(h), 50 C.F.R. Parts 17, 222 and 402, are applicable to any remedial actions that impact a proposed or listed threatened or endangered species or destroy or adversely

modify the critical habitat of a listed species. The Preliminary Baseline Risk Assessment for the PVOU identified native plant communities, wildlife, special-status species, and sensitive habitat within the general area of the PVOU. No endangered species are known or suspected to occur in the locations where remedial action facilities might be constructed. If, however, it appears during the implementation of the remedial action that construction activities or the discharge of treated ground water might adversely affect a proposed or listed species, EPA will consult with the U.S. Fish and Wildlife Service (FWS) in accordance with 50 CFR Part 402 and ensure that regulatory requirements are followed so that adverse impacts are avoided or mitigated.

11.2.3 California Fish and Game Code

California Fish and Game Code sections 2080, 5650(a), (b), and (f), 12015, and 12016 prohibit the discharge of harmful quantities of hazardous materials into places that may deleteriously affect fish, wildlife, or plant life. These provisions are applicable if the remedial action will result in the discharge of treated ground water to surface waters.

11.2.4 Archaeological and Historic Preservation Act

This statute and implementing regulations, 16 U.S.C. § 469, 40 C.F.R. Part 6.301(c), establish requirements for the evaluation and preservation of historical and archaeological data that may be destroyed through alteration of terrain as a result of a federal construction project or a federally licensed activity or program. The only known site of historical interest in the PVOU is the Workman and Temple Family Homestead Museum, located at 15415 Don Julian Road (a short distance north of cluster well MW6-6). These requirements are applicable if the remedial action will interfere with this facility.

11.2.5 Historic Sites, Buildings, and Antiquities Act

The Historic Sites, Buildings, and Antiquities Act, 16 U.S.C. §§ 461-467, 40 C.F.R. Part 6.301(a), requires federal agencies to consider the existence and location of landmarks on the National Registry of Natural Landmarks to avoid undesirable impacts on such landmarks. The remedial action is not anticipated to affect any of the facilities regulated under the act. However, during preliminary design, a complete review will be made of impacted areas.

11.3 Action-specific ARARs

11.3.1 Local Air Quality Management

One VOC treatment technology that may be used is air stripping. Air emissions from air strippers are regulated by the California Air Resources Board, which implements the federal Clean Air Act (CAA), as well as the air pollution control requirements of the California H&SC, through local air quality management districts. Local districts may impose additional regulations to address local air emission concerns. The local air district for the PVOU is the South Coast Air Quality Management District (SCAQMD). The SCAQMD has adopted several rules that are ARARs for air stripper emissions and construction activities.

SCAQMD Regulation XIII, comprising Rules 1301 through 1313, establishes new source review requirements. Rule 1303 requires that all new sources of air pollution in the district use best available control technology (BACT) and meet appropriate offset requirements. Emissions offsets are required for all new sources that emit in excess of one pound per day.

SCAQMD Rule 1401 requires that best available control technology for toxics (T-BACT) be employed for new stationary operating equipment, so that the cumulative carcinogenic impact from air toxics does not exceed the maximum individual cancer risk limit of 10 in 1 million (1×10^{-5}). Many of the contaminants found in the PVOU ground water are air toxics subject to Rule 1401.

SCAQMD Rules 401 through 403 are also ARARs for construction and operation of remedial action facilities. SCAQMD Rule 401 limits visible emissions from a point source. Rule 402 prohibits discharge of material that is odorous or causes injury, nuisance, or annoyance to the public. Rule 403 limits downwind particulate concentrations.

11.3.2 Federal Clean Water Act and California Porter-Cologne Water Quality Act

California's Porter-Cologne Water Quality Act incorporates the requirements of the federal Clean Water Act (CWA) and implements additional standards and requirements for surface and ground waters of the state.

Water Quality Control Plan for the Los Angeles Region (Basin Plan)

The RWQCB formulates and enforces water quality standards through a Basin Plan. The Basin Plan identifies the beneficial uses of surface and ground waters in the San Gabriel River watershed and establishes water quality objectives necessary to protect these beneficial uses. Water quality objectives impose limitations on receiving waters, rather than discharges, and are applicable to any water body that receives discharge from remedial activities in the PVOU.

The selected remedial action may result in the discharge of treated ground water to Puente Creek immediately upstream from San Jose Creek, which is tributary to the San Gabriel River. Table 2-1 of the Basin Plan identifies the following beneficial uses for San Jose Creek:

- Municipal and domestic supply (potential beneficial use)
- Ground-water recharge (intermittent beneficial use)
- Water contact recreation (potential beneficial use)
- Noncontact water recreation (intermittent beneficial use)
- Warm fresh water habitat (intermittent beneficial use)
- Wildlife habitat (existing beneficial use)

The Basin Plan identifies the same beneficial uses for the segment of the San Gabriel River below the confluence with San Jose Creek.

Since municipal and domestic water supply is a potential beneficial use of these surface waters, the MCLs listed in Table 1 are applicable as water quality objectives for San Jose

Creek. In addition, the following water quality objectives from Table 3-8 of the Basin Plan are ARARs for San Jose Creek and the relevant segment of the San Gabriel River:

- Total Dissolved Solids: 750 mg/L
- Sulfate: 300 mg/L
- Chloride: 150 mg/L
- Boron: 1.0 mg/L
- Nitrogen (NO₃-N + NO₂-N): 8 mg/L

The Basin Plan also establishes water quality objectives for ground water in the Puente and Main San Gabriel Basins (Table 3-10). These water quality objectives are applicable to any discharge that impacts ground water. However, if the selected remedy results in discharge to surface waters, it is expected to have a negligible effect on ground water (Camp, Dresser and McKee Inc., 1988).

State Water Resources Control Board Resolution 68-16

The Basin Plan also incorporates the State Water Resources Control Board (SWRCB) policy "Statement of Policy with Respect to Maintaining High Water Quality in California" (Resolution 68-16). Resolution 68-16 requires that existing water quality be maintained unless it is demonstrated that a change will benefit the people of California, will not unreasonably affect present or potential uses, and will not result in water quality less than prescribed by other state policies. Any activity that may increase the volume or concentration of a waste discharged to surface or ground water is required to use the "best practicable treatment or control."

Resolution 68-16 is applicable to discharges of treated ground water. The RWQCB requested that the PVSC evaluate the potential impact of nitrates and TDS contained in treated ground water on receiving waters and investigate alternative discharge options. The PVSC complied with this request and prepared a report, *Puente Valley Operable Unit Discharge Options Study Report* (Camp, Dresser & McKee Inc., 1998), which concluded that any discharges from the remedial action will not significantly impact receiving waters or their beneficial uses. The report also identified substantial costs associated with treatment of nitrates and TDS and failed to identify significant reliable alternative uses for nonpotable treated ground water. The RWQCB has determined that the selected remedy will comply with this ARAR as long as discharges to surface water are monitored and the estimated impacts on receiving waters are correct (*Consideration of Approval of a Resolution Supporting U. S. EPA's Proposed Plan for the Puente Valley Superfund Cleanup. Resolution 98-016, RWQCB, September 14, 1998*).

State Water Resources Control Board Resolution 92-49

Subsection III.G of the SWRCB's "Policies and Procedures for Investigation and Cleanup and Abatement of Discharges under Water Code Section 13304" (Resolution 92-49) requires attainment of background water quality or, if background levels cannot be restored, the best quality of water that is reasonable. Resolution 92-49 is not an ARAR because this is an interim remedial action to contain the spread of contamination, rather than a final action to restore ground water in the PVOU.

11.3.3 Standards Applicable to CERCLA Section 104(b) Discharges to Surface Waters

Site investigation activities undertaken pursuant to CERCLA § 104(b) are considered to be removal actions. It is EPA policy that removal actions "comply with ARARs to the extent practicable, considering the exigencies of the circumstances." (55 Fed. Reg. 8756).

It is possible that certain site investigation activities will take place during remedial design, which will result in temporary high-flow, high-volume discharges of contaminated ground water (e.g., discharges from aquifer testing and spinner logging/depth-specific sampling of water supply wells). EPA has considered the best available technology economically achievable (BAT) for treatment and disposal of these discharges. The four disposal options that EPA considered are: (1) discharge to an existing drinking water distribution system, (2) onsite storage and disposal at a Resource Conservation and Recovery Act (RCRA)-approved hazardous waste facility, (3) discharge to a sanitary sewer for treatment at a wastewater treatment plant, and (4) onsite treatment and discharge to surface water channels. EPA has concluded that compliance with chemical-specific ARARs is not practicable, considering the exigencies of the circumstances, for many temporary high-flow, high-volume discharges.

EPA has determined that compliance with chemical-specific ARARs is practicable and necessary for CERCLA § 104(b) activities that do not result in temporary high-flow, high-volume discharges. EPA will determine the application of chemical-specific ARARs to CERCLA § 104(b) activities on a case-by-case basis. Where practicable, these discharges must comply with ARARs.

11.3.4 California Hazardous Waste Management Program

The federal RCRA establishes requirements for the management and disposal of hazardous wastes. In lieu of the federal RCRA program, the State of California is authorized to enforce its Hazardous Waste Control Act, and implement regulations (CCR Title 22, Division 4.5), subject to the authority retained by EPA in accordance with the Hazardous and Solid Waste Amendments of 1984 (HSWA). California is responsible for permitting treatment, storage, and disposal facilities within its borders and carrying out other aspects of the RCRA program. Some of the Title 22 regulations are applicable to the generation and disposal of hazardous wastes in the PVOU.

Hazardous Waste Generator Requirements

CCR Title 22 establishes requirements applicable to generators of hazardous waste. Implementation of the remedial action may generate hazardous waste as a result of ground-water monitoring and well installation (e.g., contaminated soil and ground water and used personal protective equipment). Hazardous waste may also be generated as a result of ground-water treatment to remove VOCs (e.g., spent carbon). These requirements are applicable to remedial actions in the PVOU.

The preamble to the NCP clarifies that when noncontiguous facilities are treated as one site, the movement of hazardous waste from one facility to another is subject to RCRA manifest requirements (55 Fed. Reg. 8691). Manifest requirements are ARARs in the event that the remedial action involve multiple water treatment units at different locations and require the movement of hazardous wastes (e.g., spent carbon) between these locations.

Land Disposal Restrictions

CCR Title 22 defines hazardous wastes that cannot be disposed of to land without treatment. Land disposal requirements are applicable to the disposal of spent carbon generated during the treatment of ground water for removal of VOCs, if carbon adsorption is used, and the disposal of residuals associated with ground-water monitoring and well installation (e.g., contaminated soil and ground water, used personal protective equipment).

Hazardous Waste TSD Facility Requirements

CCR Title 22, Division 4.5, Chapter 14, specifies Hazardous Waste TSDF requirements that regulate the design, construction, operation, and closure of RCRA-permitted TSDFs. Since the contaminated ground water is sufficiently similar to RCRA hazardous wastes, Title 22 TSDF requirements are relevant and appropriate for the design, construction, operation, and closure of any ground-water treatment systems. The Title 22 ARARs include the substantive requirements of the following provisions:

- Section 66264.14: Security Requirements
- Section 66264.25: Seismic and Precipitation Standards
- Section 66264.94: Ground Water Protection Standards
- Sections 66264.111-115: Closure of Treatment Units
- Sections 66264.170-178: Use and Management of Containers
- Sections 66264.600-603: Standards for Miscellaneous Treatment Units

11.4 ARARs Waivers

This remedial action is an interim measure to contain contaminant migration. EPA, therefore, has not established chemical-specific ARARs for restoration of the contaminated portions of the PVOU. These ARARs will be addressed in the ROD for the PVOU.

12 Documentation of Significant Changes

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EPA presented the Proposed Plan for this interim action for public comment in January 1998. The Proposed Plan identified Alternative 3 as the preferred remedy and proposed that it be implemented through a performance-based approach. Alternative 3 includes ground-water extraction, containment, and treatment of contaminated ground water, and monitoring to ensure compliance with RAOs. EPA has reviewed all written and verbal comments submitted during the public comment period. Upon review of these comments, it was determined that no significant changes to the selected remedy, as presented in the Proposed Plan, were necessary.

13 Statutory Determinations

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As required under Section 121 of CERCLA, EPA must select remedies that are protective of human health and the environment, comply with applicable or relevant and appropriate requirements (unless a statutory waiver is justified), are cost-effective, and utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. In addition, CERCLA includes a preference for remedies that employs treatment that permanently and significantly reduces the volume, toxicity, or mobility of hazardous wastes. The following sections discuss how the selected remedy meets these statutory requirements.

13.1 Protection of Human Health and the Environment

The selected remedy will protect human health and the environment by limiting further downgradient and vertical migration of contaminated ground water and by removing significant contaminant mass from the aquifer. The remedy will reduce potential risks by decreasing the likelihood and magnitude of future exposure to contaminated ground water. Contaminant concentrations in the ground water in the areas to be addressed by the remedy are currently tens to thousands of times higher than acceptable levels. Available treatment technologies are technically feasible and proven effective in meeting ARARs for VOCs in the treated ground water and air. Implementation of the remedy will not pose unacceptable short-term risks. In addition, no adverse cross-media impacts are expected.

13.2 Compliance with ARARs

The selected remedy shall comply with all ARARs, which are listed in Section 11 of this ROD. No ARARs waivers are expected to be needed. Because this is an interim action, EPA has not established chemical-specific ARARs for restoration of the ground water.

13.3 Cost-Effectiveness

EPA believes the selected remedy is cost-effective and uses permanent solutions and treatment technologies to the maximum extent practicable. The selected remedy will reduce the mobility of the contaminants in the aquifer and will permanently reduce the volume of contamination by limiting the migration of contaminants and removing contaminant mass.

13.4 Community Acceptance

Several commenters expressed support for EPA's proposed remedy. Some commenters did not believe that the remedy was necessary or supported by the information that has been collected to date. EPA has determined that the preferred alternative presented in the Proposed Plan represents the most appropriate remedy for the ROD site. None of the comments suggested a change to the overall remedy that EPA selected. The comments

received during the public comment period, along with EPA's responses, are presented in Part II of this ROD.

13.5 Utilization of Permanent Solutions and Alternative Treatment Technologies to the Maximum Extent

The selected remedy will include ground-water extraction and treatment for removal of VOCs to meet the performance criteria specified in this ROD. The selected remedy, therefore, is expected to use permanent solutions and alternative treatment technologies to the maximum extent practicable.

13.6 Preference for Treatment as a Principal Element

The selected remedy will include ground-water treatment as a principal element of the remedy to meet the Performance Criteria.

13.7 Five-Year Reviews

Because the remedy will result in hazardous substances remaining onsite above health-based levels, EPA shall conduct a review of the remedy, pursuant to CERCLA Section 121, 42 U.S.C. Section 9621, at least once every 5 years after commencement of remedial action. The review will assess whether the remedy continues to provide adequate protection of human health and the environment. If it is determined that the remedy is no longer protecting human health and the environment, then modifications to the remedy will be evaluated and implemented as necessary.

14 References

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Tables

Table 1
ARARs for Chemicals of Potential Concern

| Compound | ARAR (µg/L) | Source |
|--|----------------|-----------------------|
| 1,1-Dichloroethane | 5 | California MCL |
| 1,1-Dichloroethene | 6 | California MCL |
| 1,1,1-Trichloroethane | 200 | Federal MCL |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 1,200 | California MCL |
| 1,1,2-Trichloroethane | 3 | Federal MCLG |
| 1,1,2,2-Tetrachloroethane | 1 | California MCL |
| 1,2-Dichlorobenzene | 600 | Federal MCL |
| 1,2-Dichloroethane | 0.5 | California MCL |
| 1,2-Dichloroethene (total) | 6 ¹ | California MCL |
| 1,2-Dichloropropane | 5 | Federal MCL |
| 1,2,4-Trichlorobenzene | 70 | Federal MCL |
| 1,2,4-Trimethylbenzene | - | - |
| 1,3-Dichlorobenzene | 600 | Federal MCL |
| 1,3 B Dichloropropene | 0.5 | California MCL |
| 1,3,5-Trimethylbenzene | - | - |
| 1,4-Dichlorobenzene | 5 | California MCL |
| 2-Propanone | - | - |
| Benzene | 1 | California MCL |
| bis(2-Ethylhexyl)phthalate | 4 | California MCL |
| Bromochloromethane | - | - |
| Bromodichloromethane² | 100 | Federal MCL |
| Bromoform² | 100 | Federal MCL |
| Bromomethane | - | - |
| n-Butylbenzene | - | - |
| sec-Butylbenzene | - | - |
| tert-Butylbenzene | - | - |
| Carbon Disulfide | - | - |
| Carbon Tetrachloride | 0.5 | California MCL |
| Chlorobenzene | 70 | California MCL |
| Chloroethane | - | - |
| Chloroform² | 100 | Federal MCL |
| cis-1,2-Dichloroethene | 6 | California MCL |
| cis-1,3-Dichloropropane | - | - |
| Dibromochloromethane² | 100 | Federal MCL |
| Dibromochloropropane | 0.2 | Federal MCL |
| Di-n-butylphthalate | - | - |
| Dichlorofluoromethane | C | C |
| Ethylbenzene | 700 | Federal MCL |
| Isopropyl alcohol | - | - |
| Isopropyl benzene | - | - |
| Methylene Chloride | 5 | Federal MCL |
| Naphthalene | - | - |
| Styrene | 100 | Federal MCL |

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Table 1
ARARs for Chemicals of Potential Concern

| Compound | ARAR ($\mu\text{g/L}$) | Source |
|--|-----------------------------|------------------------------|
| <i>Tetrachloroethene</i> | <i>5</i> | <i>Federal MCL</i> |
| Total petroleum hydrocarbons | - | - |
| Total petroleum hydrocarbons-volatiles | - | - |
| trans-1,2-Dichloroethene | 10 | California MCL |
| trans-1,3-Dichloropropane | - | - |
| <i>Trichloroethylene</i> | <i>5</i> | <i>Federal MCL</i> |
| <i>Trichlorofluoromethane</i> | <i>150</i> | <i>California MCL</i> |
| <i>Toluene</i> | <i>150</i> | <i>California MCL</i> |
| Vinyl Chloride | 0.5 | California MCL |
| m,p-Xylene ³ | - | - |
| o-Xylene ³ | - | - |
| <i>Xylenes, total</i> | <i>1,750</i> | <i>California MCL</i> |
| ¹ Value for the cis-isomer; value for trans-isomer is 10 $\mu\text{g/L}$. ² These chemicals are trihalomethanes (THMs); the MCL listed is for all four THMs: chloroform, bromodichloromethane, dibromochloromethane, and bromoform. ³ Value for total xylenes is 10,000 $\mu\text{g/L}$; no values are provided for individual isomers. Notes: - indicates "no MCL has been established or proposed." Bold/Italicized text indicates compounds detected in groundwater during RI (PVSC monitoring wells or Suburban Water Systems wells). | | |

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Table 2
Estimated Total Noncancer Hazard Index from Domestic Use of Groundwater
Puente Valley Operable Unit

| Wells | Average Exposure | | Reasonable Maximum Exposure | | Major Chemical Contributors |
|--------------------------|------------------|------------|-----------------------------|------------|--|
| | Ingestion | Inhalation | Ingestion | Inhalation | |
| Production Well 08000077 | 0.03 | 0.03 | 0.03 | 0.03 | 1,1-Dichloroethene, Trichloroethene |
| Production Well 98000068 | 0.07 | 0.07 | 0.09 | 0.09 | Tetrachloroethene, Trichloroethene |
| Production Well 98000108 | 0.2 | 0.2 | 0.2 | 0.2 | 1,1-Dichloroethene, Trichloroethene |
| Well Group 1 | 0.6 | 0.6 | 0.6 | 0.6 | 1,1-Dichloroethene, Trichloroethene |
| Well Group 2 | 1 | 1 | 2 | 2 | 1,1-Dichloroethene, 2-Propanone |
| Well Group 3 | 40 | 30 | 60 | 60 | 1,1-Dichloroethene, Trichloroethene |
| Well Group 4 | 2 | 2 | 2 | 2 | Tetrachloroethene, Trichloroethene |
| Well Group 5 | 20 | 20 | 40 | 40 | Methylene Chloride, 2-Propanone, Trichloroethene |
| Well Group 6 | 0.9 | 0.9 | 1 | 1 | Tetrachloroethene, Trichloroethene |
| Well Group 7 | 1 | 1 | 2 | 2 | Tetrachloroethene, Trichloroethene |
| Well Group 8 | 0.4 | 0.4 | 0.5 | 0.5 | 1,1-Dichloroethene, Trichloroethene |

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Table 3
Estimated Total Excess Lifetime Cancer Risk from Domestic Use of Groundwater
Puente Valley Operable Unit

| Wells | Average Exposure | | Reasonable Maximum Exposure | | Major Chemical Contributors |
|--------------------------|--------------------|--------------------|-----------------------------|--------------------|---|
| | Ingestion | Inhalation | Ingestion | Inhalation | |
| Production Well 08000077 | 5×10^{-7} | 7×10^{-8} | 2×10^{-6} | 3×10^{-7} | Tetrachloroethene |
| Production Well 98000068 | 3×10^{-6} | 2×10^{-7} | 1×10^{-5} | 7×10^{-7} | Tetrachloroethene, Trichloroethene |
| Production Well 98000108 | 4×10^{-6} | 5×10^{-7} | 2×10^{-5} | 2×10^{-6} | Tetrachloroethene, Trichloroethene |
| Well Group 1 | 4×10^{-6} | 7×10^{-7} | 1×10^{-5} | 2×10^{-6} | Tetrachloroethene, Trichloroethene |
| Well Group 2 | 4×10^{-5} | 8×10^{-6} | 1×10^{-4} | 3×10^{-5} | 1,4-Dichlorobenzene, Tetrachloroethene, Vinyl Chloride |
| Well Group 3 | 2×10^{-4} | 1×10^{-4} | 1×10^{-3} | 7×10^{-4} | 1,2-Dichloroethane, Tetrachloroethene, Trichloroethene |
| Well Group 4 | 1×10^{-4} | 6×10^{-6} | 4×10^{-4} | 3×10^{-5} | Tetrachloroethene, Vinyl Chloride |
| Well Group 5 | 4×10^{-4} | 2×10^{-4} | 3×10^{-3} | 2×10^{-3} | 1,2-Dichloroethane, Methylene Chloride, Trichloroethene |
| Well Group 6 | 4×10^{-5} | 4×10^{-6} | 2×10^{-4} | 2×10^{-5} | Tetrachloroethene, Trichloroethene |
| Well Group 7 | 6×10^{-5} | 2×10^{-6} | 4×10^{-4} | 2×10^{-5} | Tetrachloroethene |
| Well Group 8 | 4×10^{-6} | 2×10^{-6} | 2×10^{-5} | 8×10^{-6} | Tetrachloroethene, Trichloroethene |

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Table 4
Cost Comparison of Alternatives¹
(\$1,000s)

| Alternative | Capital Costs | Annual O&M Costs | Net Present Worth (30-years @ 5%) |
|-------------|---------------|------------------|--------------------------------------|
| 2 | \$2,344 | \$360 | \$7,878 |
| 3 | \$8,276 | \$1,270 | \$27,798 |
| 4 | \$11,751 | \$1,634 | \$36,869 |

¹ Net Present Worth is based on discharge to San Jose Creek with treatment for VOCs only.

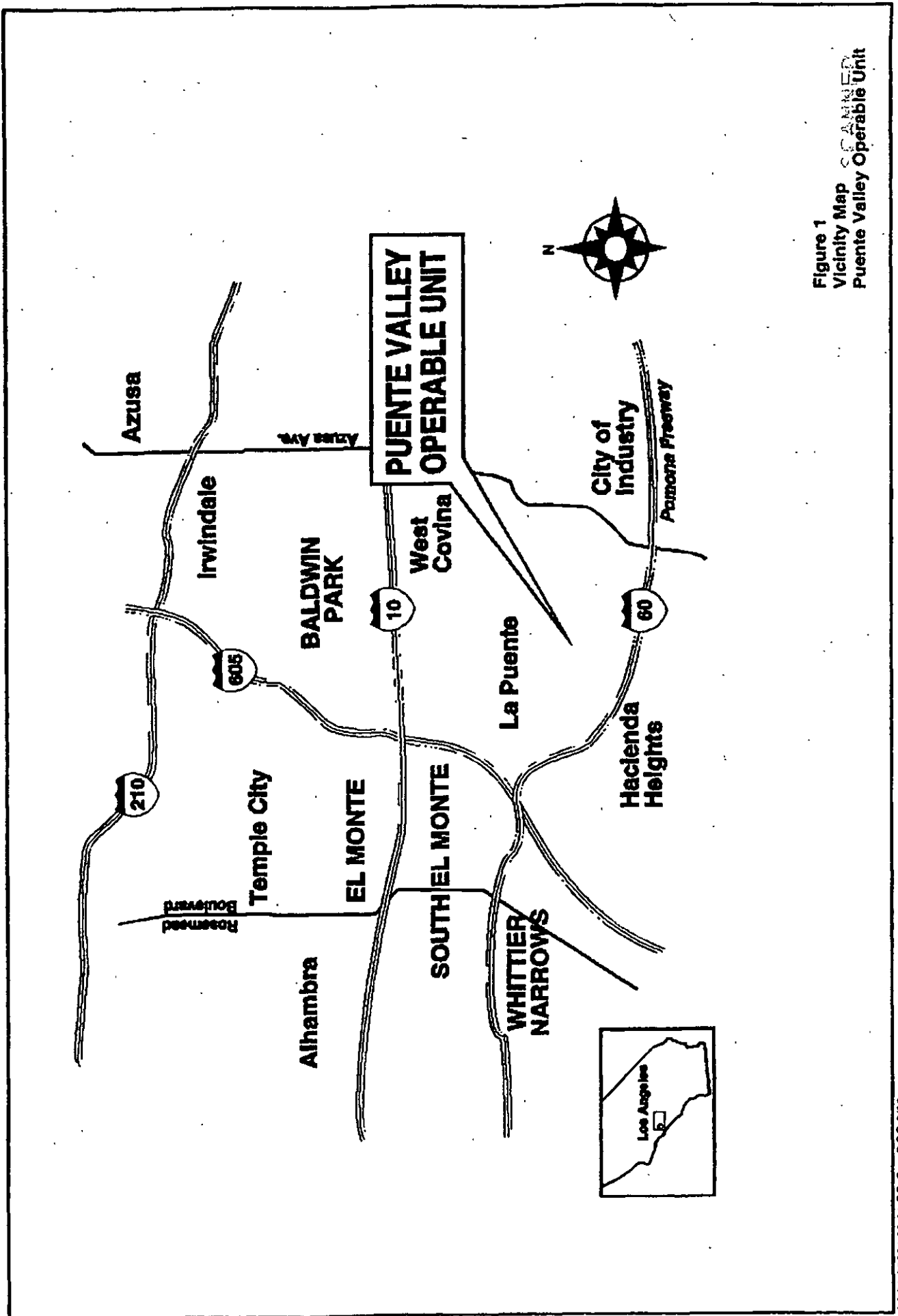
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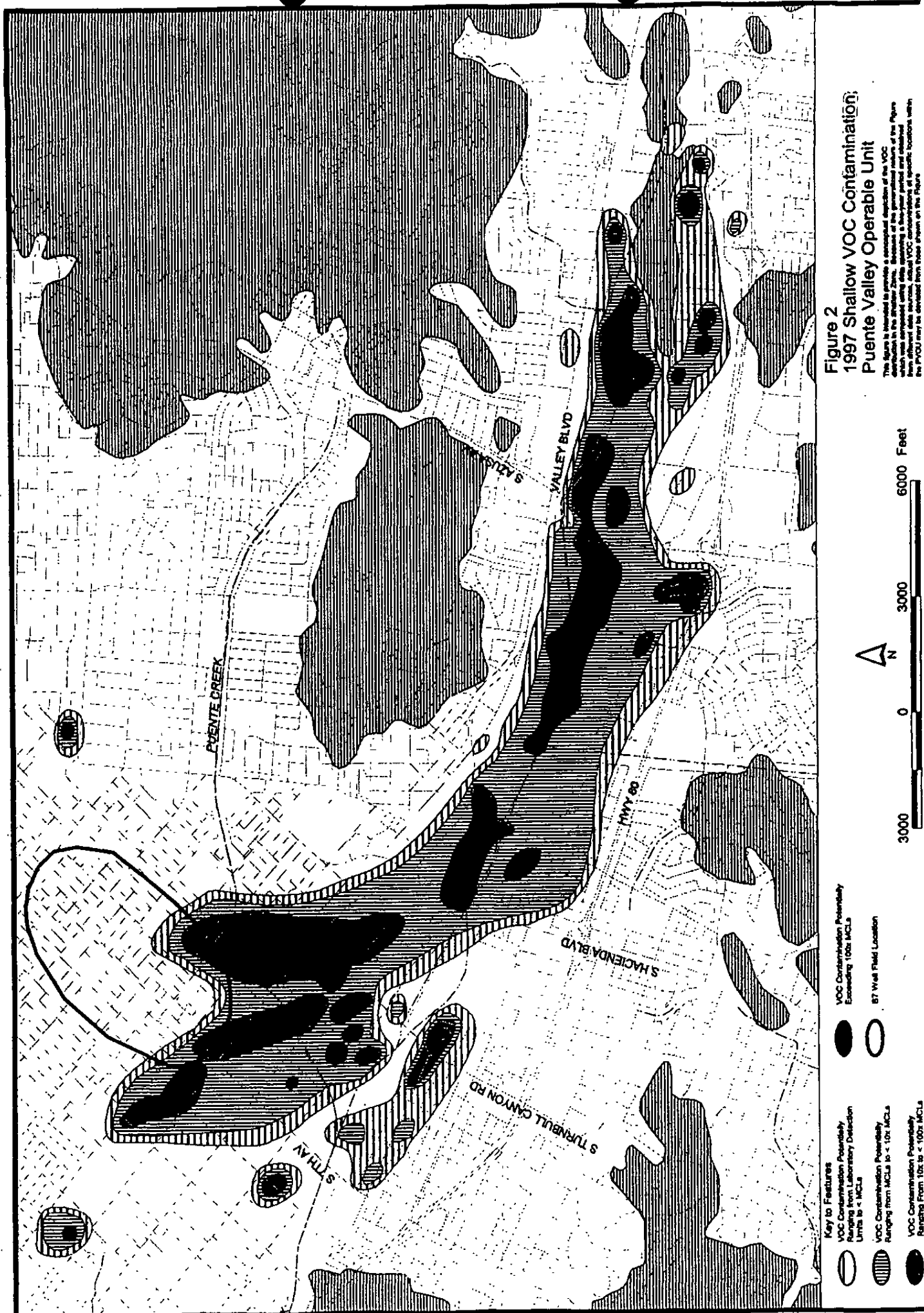
Table 5
B7 Production Wells
Puente Valley Operable Unit

| Well Identification | Station Identification |
|---------------------|------------------------|
| 152W1 | 01900337 |
| 147W1 | 01901596 |
| 105W1 | 01901608 |
| 134W1 | 01901623 |
| 150W1 | 01902519 |
| 147W3 | 08000077 |
| B7E | 08000122 |
| B9 | 91901437 |
| B11A | 91901439 |
| B7B | 91901440 |
| B7C | 98000068 |
| B7D | 98000094 |
| B9B | 98000099 |
| B11B | 98000108 |

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Figures





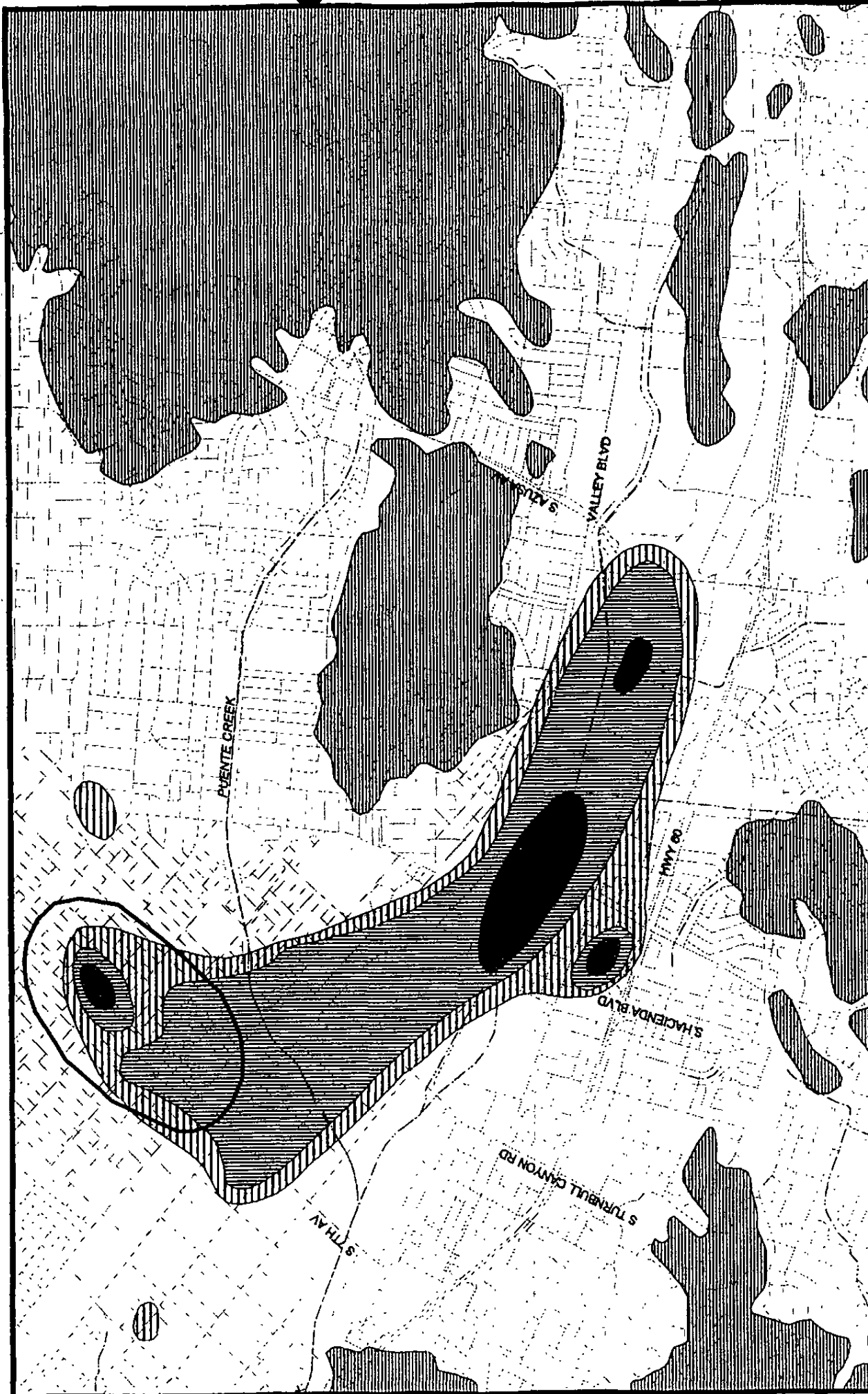


Figure 3
1997 Intermediate VOC Contamination,
Puente Valley Operable Unit

This figure is intended to provide a conceptual depiction of the VOC distribution in the Intermediate Zone. Boundaries of the potential contamination are based on data from monitoring wells. VOC concentrations at monitoring wells are shown in the figure. The figure may be derived from data shown in the figure.

- Key to Features**
- VOC Contamination Potential Ranging from Laboratory Detection Levels to < 10x MCLs
 - VOC Contamination Potential Exceeding 100x MCLs
 - BT Well Field Location
 - VOC Contamination Potential Ranging from MCLs to < 10x MCLs
 - VOC Contamination Potential Ranging from 10x to < 100x MCLs



| ALTERNATIVE | Overall Protection of Human Health and Environment | Compliance with ARARS | Long-term Effectiveness and Permanence | Reduction of Toxicity, Mobility, or Volume | Short-term Effectiveness | Implementability | Cost (\$1,000s) | State Acceptance | Community Acceptance |
|-------------------------------------|--|-----------------------|--|--|--------------------------|------------------|----------------------------|------------------|----------------------|
| 1 (No Action) | | | | | | | | | |
| 2 (Groundwater Monitoring) | | | | | | | C-\$2,244 NPW-\$7,778 | | |
| 3 (Mouth Extraction) | | | | | | | C-\$8,278 NPW-\$27,798 | | |
| 4 (Mouth and Mid-Valley Extraction) | | | | | | | C-\$11,751 NPW-\$36,869 | | |

Figure 4
Qualitative Criteria
Evaluation Matrix
Puente Valley Operable Unit

N/A - Not Applicable; no actions implemented

Low

Medium

High

NPW - Net Present Worth, 5%; 30 yrs

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INTERIM RECORD OF DECISION
SAN GABRIEL VALLEY SUPERFUND SITE
PUENTE VALLEY OPERABLE UNIT
CITY OF INDUSTRY, CALIFORNIA

Volume 2

September 1998

United States Environmental Protection Agency
Region IX - San Francisco, California

SCANNED

Part II Responsiveness Summary

This section presents the United States Environmental Protection Agency's (EPA's) responses to the written and oral comments received at the public meeting and during the public comment period. Comments were received from nine parties. This part of the Record of Decision (ROD) is divided into responses for each of the individuals or entities that provided written comments. Comments are expressed in italics; EPA's responses in plain text.

All of the oral questions and comments were responded to directly at the public meeting. These comments or questions and the associated responses are included in the transcript for the public meeting, attached as Appendix A to this Responsiveness Summary.

Responses to Written Comments

This section provides responses to written comments that EPA received during the public comment period. Comments were received from: City of Industry and the Industry Urban-Development Agency; Suburban Water Systems; Central Basin Water Association; Zevnick, Horton, Guibord, McGovern, Palmer & Fognani on behalf of Cleveland Pneumatic Corporation; San Gabriel Valley Water Company; Richard A. Sullivan; Royall K. Brown; Law Offices of Daniel Romano on behalf of Goe Engineering Company, Incorporated; and the Puente Valley Steering Committee.

Responses to Comments from City of Industry and Industry Urban-Development Agency (City), dated March 16, 1998

City Comment IA: The performance standards for each extraction area (Proposed Plan, p. 7) are too vague. Those parties who undertake to implement the remedy cannot tell, from the standards as set out in the Proposed Plan, what volatile organic chemical ("VOC") contaminant readings at which locations at the mouth of the PVOU will trigger an obligation to do what kinds of additional remedial work.

The performance criteria should be made more detailed in the ROD in at least the following ways.

- 1. Provide more guidance as to the locations of the ground-water monitoring wells used to measure the performance standards.*
- 2. Specify the VOC levels to be used for the performance standards, and set them at no less than 10 times MCL.*

Also, in the shallow zone, the group of cooperating potentially responsible parties organized as the Puente Valley Steering Committee (PVSC) has collected data over the last several months demonstrating that the plume of contaminated ground water in the shallow zone migrates as three subplumes near the mouth of the PVOU, where the Proposed Plan recommends placing the

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shallow zone extraction wells. In detailing the remedy and performance standards for the shallow zone, the ROD should allow for a remedy that addresses each of the subplumes separately.

EPA's Response: The performance criteria included in this ROD contain detailed information on the location of ground-water wells that will be used to monitor compliance with the performance criteria in both the shallow and intermediate zones (see Section 10 of the ROD). The ROD also specifies the contaminant concentrations that must be maintained.

The selected remedial action for the PVOU is containment of contaminated ground water in the shallow and intermediate zones at the mouth of Puente Valley. The ROD incorporates a performance-based approach with specific performance criteria that must be met in order to achieve the remedial action objectives for the site. The performance-based approach allows flexibility in how the performance criteria are met. Therefore, if the responsible parties choose to address the shallow ground-water contamination as three separate plumes, they may do so as long as the chosen remedial action achieves containment of the contaminated ground water and complies with the performance criteria specified in the ROD.

City Comment IB: *The City and Agency approve of the option in USEPA's Proposed Plan to install new extraction wells or to use existing water company supply wells for the intermediate zone part of the superfund remedy. Proposed Plan, p. 7. Some operating standards for using water company wells in the superfund remedy would be a useful feature in the ROD. These standards should be formulated in consultation with the PVSC and the water companies that own the supply wells, and should take into account the current and likely future operating conditions of the supply wells in the context of the companies' overall supply systems.*

EPA's Response: As of the time of the ROD, the decision to use existing water supply wells in the intermediate zone portion of the remedy has not been made. If the responsible parties choose to utilize the existing water supply wells, appropriate standards and documentation will be necessary to ensure that the requirements of the remedy will be met. Specific details will need to be defined during the remedial design stage.

City Comment IC: *The City and Agency strongly support USEPA Region IX's position in favor of a waiver of the Waste Discharge Requirements (WDR) for total dissolved solids (TDS) and nitrates for ground water that is extracted and treated for VOC contamination as part of the PVOU superfund remedy. Proposed Plan, pp. 7-8. As the USEPA's Feasibility Study recounts, such a waiver will save those who implement the remedy almost \$24 million dollars over the life of the project. Feasibility Study, Table 5-4.*

The City and Agency understand that the WDR is a requirement of a state agency, the California Regional Water Quality Control Board - Los Angeles Region (the "Regional Board"). The City and Agency already have sent a letter to the Regional Board showing their support for the waiver, a copy of said letter is attached as Exhibit A to these comments and incorporated into

them by reference.

In supporting the Regional Board's grant of this waiver, USEPA Region IX should take at least the following steps. First, because the Regional Board's WDR is based in part on provisions of the federal Clean Water Act, Region IX should inform the Regional Board that the TDS and nitrate waiver requested for the PVOU superfund remedy is consistent with the applicable requirements of the Clean Water Act and implementing regulations. Second, the ROD for the PVOU should make clear that USEPA Region IX does not consider a WDR for TDS and nitrates to be an ARAR for implementation of the superfund remedy in the operable unit. Third, USEPA Region IX should affirm in the ROD that the waiver of the WDR would be consistent with all past and present memoranda of understanding and funding agreements for the Puente Valley area between the Regional Board and USEPA Region IX.

EPA's Response: The selected remedy allows for the discharge to Puente Creek of treated shallow ground water containing nitrate and/or TDS in excess of water quality standards, so long as the discharge does not cause an exceedence of water quality standards in San Jose Creek, the San Gabriel River or the ground waters of the Puente and Main San Gabriel basins, and so long as the impacts of the nitrate and TDS on the receiving waters are consistent with the estimates set forth in the *Discharge Options Report* prepared by Camp Dresser & McKee, Inc. The *Discharge Options Report* found that the impact of the treated ground water discharge to receiving waters would be insignificant and that alternative disposal options for the treated shallow ground water were unavailable or very expensive.

On September 14, 1998, the Regional Board approved a resolution in support of EPA's selected remedy, including the potential discharge of treated shallow ground water. It is not necessary for the Regional Board to waive discharge requirements for nitrate and TDS. The water quality standards for nitrate and TDS in San Jose Creek, the San Gabriel River and the Puente and Main San Gabriel basin ground waters are ARARs for the selected remedy.

City Comment ID: *The Regional Board has several important facility specific "hot spot" cleanups under way, and has made substantial progress since the middle of last year in having property owners and tenants at those properties plan for, initiate, and continue these cleanups. Completing appropriate cleanups at "hot spot" sites within the next few years would remove major contamination from the area's ground water, should help reduce operating and maintenance costs for the regional PVOU superfund remedy, and could help reduce capital costs for the shallow zone component of the superfund remedy.*

Regional Administrator Felicia Marcus recognized the importance of earlier "hot spot" cleanups at superfund sites in her letter to Congressman Esteban Torres of March 24, 1997, a copy of which is attached to these comments as Exhibit B. The City and Agency approve of Region IX's commitment to encourage the Regional Board to pursue these "hot spot" cleanups in its memo to the National Remedy Review Board of December 30, 1997. The City and Agency urge USEPA Region IX to reaffirm this commitment, and to provide meaningful detail about how

Region IX will fulfill it, in the ROD.

EPA's Response: EPA recognizes the positive impact site-specific cleanups being conducted under the supervision of the RWQCB by individual facilities have on the quality of ground water in the PVOU. These cleanups, however, are outside the purview of the EPA regional ground-water investigation. EPA reiterates its support of the RWQCB's efforts and will continue to work with the RWQCB.

City Comment IE1: *The City believes that the Proposed Plan as developed in the Feasibility Study as Alternative 3 is justified as a means of containing the existing contamination in the PVOU at about the point of its current migration to the west and northwest, and to reduce substantially its mass over the next several years. The Proposed Plan, however, contains several features that exaggerate or inaccurately portray the real threat of the existing contamination, both to public health and to ground water resources in and around the San Gabriel Basin. Four of the more important of these features are described in this subsection.*

These inaccuracies and exaggerations ignore either the existing effective system of state and local controls on ground water use that protect the public, or the real data on the extent of existing contamination. Therefore, they should be corrected in the ROD.

1. The Health Risk Assessment and the Unrealistic Assumption of Human Use of Contaminated Ground water

In its Proposed Plan, USEPA Region IX continues to rely on a health risk assessment that includes human ingestion of VOC contaminated ground water in the Puente Valley. As the City has pointed out, this exposure pathway is highly unrealistic, because a combination of California law and the system of institutional controls on ground water use in the San Gabriel Valley effectively prevent anyone from drinking contaminated ground water. See, "Comments on the Feasibility Study of the Puente Valley Operable Unit...by the City of Industry...", (October, 1997), a copy of which accompanies these comments as Exhibit C and is incorporated by reference into them. In fact, USEPA Region IX itself has conceded that this exposure pathway is unrealistic because of these same state and local laws and controls. Feasibility Study, p. 3-7.

USEPA Region IX should eliminate this exposure pathway from the health risk assessment in the ROD. The resulting revised assessment will show a more realistic reduced risk to human health. At the same time, the City expects that the new assessment, and other evidence in the record, will still support a remedy, like the Proposed Plan, based on containing the western edge of the regional contamination before it reaches clean areas in the main San Gabriel basin, while allowing the currently contaminated ground water areas to the east in the Puente Valley to improve gradually.

EPA's Response: EPA conducted the Baseline Risk Assessment for the PVOU in accordance with CERCLA, the NCP and relevant EPA guidance. The goal of the risk assessment was to

perform a preliminary streamlined evaluation of the potential risks associated with contaminated ground water in the PVOU. To assess potential risks, EPA is required to evaluate the reasonable maximum exposure (RME) scenario, which is the "highest exposure that is reasonably expected to occur" under baseline conditions. Under baseline conditions there are no regulatory controls, such as the federal and state Safe Drinking Water Act regulations or the Rules and Regulations of the Main San Gabriel Basin Watermaster, on the use of contaminated ground water (55 Fed.Reg. 8709). In addition, these restrictions on access to ground waters do not eliminate the exposure pathway.

EPA's assumption that contaminated ground water in the PVOU could be used as drinking water is reasonable. All ground water in the PVOU is considered by the State of California to be either an existing or potential source of drinking water. Municipal water supply wells currently extract contaminated ground water from the intermediate zone at the mouth of the Puente Valley. Municipal water providers have previously produced drinking water from other contaminated areas in the PVOU and, in at least one instance, recently sought to install a drinking water well in a highly contaminated area in the PVOU. Therefore, under baseline conditions, human ingestion of contaminated ground water is a realistic exposure pathway. The results of the risk assessment support the need for an interim action to prevent further migration of contaminated ground water.

EPA agrees that other evidence in the record supports the selection of this remedy.

City Comment IE2: *The City and Agency concur with USEPA Region IX's objectives to protect currently uncontaminated areas and reduce impacts on the existing water supply wells at the northwestern edge of the regional VOC contamination. Proposed Plan, p. 4. The City and Agency do not concur with the goals of preventing mid-term movements of higher contamination into locations that now have lower contamination within the existing regional plumes of ground water contamination, and ask that Region IX omit these goals from the ROD.*

The City takes this position because local governments, water masters and water companies, applying the system of state and local controls noted above, already manage the currently contaminated areas without exposing any humans to contaminated ground water, and can continue to manage the same area without health risks to humans for the next few decades. Therefore, movement of some current hot spots several hundred yards down gradient into areas of lower contamination for a few years does not pose any realistic threat.

Ultimately, the City and Agency expect that the Proposed Plan will remove substantial amounts of VOCs, some of the currently contaminated ground water areas will become clean, and all such areas will show reduced VOC concentrations. This general, long-term progress should make the remedy outlined in the Proposed Plan consistent with keeping the PVOU available as a potential future water supply source over the longer term. Short-term improvements in contamination levels in every part of the PVOU in every year the superfund remedy operates are not necessary.

EPA's Response: The selected remedy does not attempt to control the movement of highly contaminated ground water into areas of lower contamination, except at the boundaries of the contaminant plumes at the mouth of Puente Valley. EPA will consider the need for and feasibility of addressing upgradient contamination when EPA evaluates potential final remedial actions for the PVOU.

City Comment IE3: *In describing the threat to the region's ground water resources, the Proposed Plan suggests that the contamination currently in the PVOU could flow approximately 6.5 miles through the main San Gabriel Basin and the Whittier Narrows into the Central Basin. Proposed Plan, p. 2. There is no support for this suggestion. In fact, the available evidence shows that there is a large area of clean ground water in the southern part of the main San Gabriel Basin between the western edge of the PVOU and contamination generated by facilities in South El Monte and El Monte located between the PVOU and the Whittier narrows. Therefore, this suggestion should not be included in the ROD.*

EPA's Response: In the absence of significant ground-water pumping by production wells within the San Gabriel Basin, in the vicinity of the mouth of the Puente Valley, ground water flowing out of the Puente Valley would eventually travel west and southwest towards Whittier Narrows. This natural flow direction is documented in historical maps of the potentiometric surface prior to significant pumping in the area. For the effect of ground water pumping near the mouth of the valley to be considered appropriate as a means of containing contamination, these wells would need to be considered part of the CERCLA remedy. This option is left open in the Record of Decision, as well as in the Proposed Plan. Unless pumping at these wells is considered part of the CERCLA remedy, it cannot be assumed that this pumping will continue indefinitely, thus preventing migration of Puente Valley contamination through Whittier Narrows, and into the Central Basin.

City Comment IE4: *The Proposed Plan identifies the presence of Dense Non-Aqueous Phase Liquids ("DNAPLS") as a "principal threat" in the PVOU. Proposed Plan, p. 4. This identification is surprising because the Remedial Investigation and Feasibility Study contain extensive data gathered over several years of ground water contamination in the PVOU by VOCs that are not DNAPLs, but no direct detection of any DNAPL compounds.*

While Region IX believes that some indirect evidence exists that "suggests the possible presence of DNAPLs," making this mere suggestion into a "principal threat" greatly exaggerates the real evidence of the DNAPL threat to ground water resources in the PVOU and nearby main San Gabriel Basin. Hence, it should not be included as a principal threat in the ROD. Instead, the ROD should rely on the real evidence of ground water contamination in the PVOU from VOCs that are not DNAPLs, and adopt a remedy, based on the Proposed Plan, that reasonably addresses this real VOC problem.

EPA's Response: For the VOC contamination in ground water at the PVOU, the concept of "principal threat" does not apply, therefore it is not included in this Interim ROD.

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City Comment IF: *Neither the Proposed Plan nor the Feasibility Study include any assessment levied by the Main San Gabriel Basin Watermaster. Proposed Plan, pp. 7-8 and Feasibility Study, Tables 5-4 and 5-5. In the past, the Watermaster has levied several assessments. The following is a list of these assessments:*

*Administrative
In-Lieu
Replacement Water
Make-up Water
Special.*

The City and Agency recommend that the information about these costs be included in the ROD for an adopted remedy based on Alternative 3.

As an example, under current local ground water controls, replacement water charges could apply to both the intermediate and shallow zone components of Alternative 3. In the intermediate zone, if the project sponsors do not use the existing water supply wells and instead install their own system, they probably will treat this ground water, which is low in TDS and nitrates, for the VOCs, and then sell the clean water to a local company. This domestic use will require the sponsors to pay replacement charges, as well as some of the other Watermaster Assessments.

In the shallow zone, the project sponsors probably will discharge the ground water, which is high in TDS and nitrates into a lined portion of the San Jose Creek after they treat it for VOCs. Such a discharge may or may not be viewed as transport out of the Main San Gabriel Basin, depending in part on the area where this discharged water reaches unlined water bodies and recharges into ground water. It is uncertain as to which if any, of the Assessments would be levied by Watermaster under these circumstances.

Both the intermediate and shallow zone well fields, as described in the Proposed Plan, will extract ground water from the Main San Gabriel Basin. Therefore, the Main San Gabriel Basin Watermaster could impose the Replacement Water charge. This charge currently is \$246.65 per acre-foot. It probably will increase gradually over the years, because it is indexed to Metropolitan Water District charges, which are projected to rise in the future.

EPA's Response: The comment correctly points out the need to consider replenishment costs if ground water is to be extracted. The PVSC's initial draft Feasibility Study did not incorporate these costs. EPA had subsequent conversations with the Main San Gabriel Basin Watermaster, and based on those conversations, replenishment water costs would not be incurred as long as the treated water was discharged/recharged back into the San Gabriel Basin. The selected remedy includes discharge of treated water into the surface waters within the PVOU and consequently within the San Gabriel Basin. Therefore, it is unlikely that replenishment water costs will be charged as a result of implementation of the selected remedy, and the Watermaster reiterated their support for implementing remedial actions that extract and treat contaminated ground water.

City Comment IIA: USEPA Region IX should designate the final landowners and businesses in the Puente Valley whom it considers potentially responsible parties, and, therefore, liable for superfund response costs in the PVOU. Region IX should make these designations well before it issues the ROD, so that the designated parties have an opportunity to review the Proposed Plan, have communications with Region IX and the PVSC, and become integrated into negotiations between the PVSC and Region IX for an agreement on PVSC implementation of the remedy adopted in the ROD.

Region IX bases its decisions in designating PRPs on information about individual sites gathered by the Regional Board. The City and the Agency understand that the Board's staff has finished its investigations on all but a handful of individual properties. At this point, the City and Agency believe that it is reasonable and fair for Region IX to make a decision about all individual properties, with the exception of properties where the responsible business or landowner has resisted Board requests or orders for investigatory work.

CERCLA itself directs USEPA to designate PRPs at a federal superfund site before it issues the ROD for the site. 42 U.S.C Section 9613 (k)(2). This directive establishes a fair procedure because it assures that the parties whom the USEPA believes should pay the superfund costs have a chance to review and comment on the proposed superfund remedy before USEPA adopts it. In addition, this statutory directive fosters implementability of the superfund remedy the ROD approves because a cooperating group of PRPs, like the PVSC here, is more likely to reach an agreement to design and build the superfund remedy quickly once it knows all the parties who are liable to pay for it.

Finally, designating all the PRPs before issuance of the ROD facilitates another USEPA policy, encouraging early cash out settlements for parties who contributed relatively small amounts of contamination to the regional pollution problem. Nationally, the USEPA has had a policy of encouraging early de minimis settlements since at least 1993. Early last year, the Regional Administrator promised members of Congress that Region IX would encourage similar early cash out settlements with smaller parties in the San Gabriel Basin superfund sites, including the PVOU. Exhibit B pp. 2-3.

As a practical matter, it is difficult for a cooperating PRP group to participate in de minimis settlement discussions until its members know with substantial certainty the size of the group of PRPs as a whole and the relative size of the subgroup of PRPs with sufficiently small liability shares to qualify for cash out settlements. Therefore, USEPA Region IX's failure to date to designate the final PRPs for the PVOU is creating a significant obstacle to realizing its own policy favoring early cash out settlements at superfund sites.

EPA's Response: This is an enforcement issue that does not affect EPA's consideration of remedial alternatives or selection of a remedial action. EPA expects to complete the identification of all PRPs for the PVOU within a few months of this ROD. It has taken a number of years for the Regional Board to investigate the hundreds of current and former industrial and

commercial facilities in the PVOU that may have used chlorinated solvents and for EPA and the Regional Board to identify those that are sources of ground water contamination and the entities that are legally responsible for the contamination.

Section 9613(k)(2) of CERCLA requires EPA to "make reasonable efforts to identify and notify potentially responsible parties as early as possible before selection of a response action." EPA is not required to postpone the selection of a response action until all PRPs are identified. EPA agrees that it is desirable to identify and notify all PRPs as soon as reasonably possible, and intends to do so for the PVOU.

City Comment IIB: *The PRPs must pay for both the superfund remedy, as outlined in the Proposed Plan, and for the USEPA's past investigatory and other response costs allocable to the PVOU. The Proposed Plan gives a cost estimate for the superfund remedy of \$27.8 million. USEPA Region IX has not, however, given the PVSC or the public its past cost figure to date.*

Region IX should release this past cost figure, together with supporting documentation, as soon as possible, so that it may be considered well before the ROD is issued. Based on past cost figures for other superfund sites, PVOU's past costs may approach \$10 million, or about one-third the cost of the entire superfund remedy. Uncertainty about such a significant cost figure creates an obvious practical obstacle for members of the PVSC and other PRPs interested in agreeing to fund the superfund remedy to negotiate agreement for the remedy with Region IX quickly. Moreover, since the past costs need to be factored into the cash out settlements, Region IX's failure to provide this figure discourages and delays negotiations over these types of settlements, thereby undermining USEPA's policy favoring early cash outs.

EPA's Response: This is an enforcement issue that does not affect EPA's consideration of remedial alternatives or selection of a remedial action. EPA intends to provide the PVOU PRPs with an estimate of past response costs and supporting documentation as soon as this information is available. EPA will take past costs into consideration if EPA settles with any PRPs.

Response to Suburban Water Systems (SWS) Comment, dated March 13, 1998

SWS Comment: *Suburban Water System supports the EPA Alternative 3, Ground-water control in the shallow and intermediate zones at the mouth of the valley and ground-water monitoring.*

EPA's Response: Comment noted.

Response to Central Basin Water Association (CBWA) Comment, dated February 12, 1998

CBWA Comment: *The Central Basin Water Association supports USEPA's Proposed Plan for the Puente Valley Operable Unit.*

The goal of CBWA with regard to activities at the San Gabriel Superfund Sites is to prevent the migration of any contaminants above the Maximum Contaminant Level past Whittier Narrows. Contamination from the Puente Basin has already migrated into the Main San Gabriel Ground water Basin, requiring that purveyors treat water from affected wells in order to meet drinking water standards. The Proposed Plan (Alternative 3 of the four alternatives outlined in the feasibility study) requires extractions and treatment as needed to meet performance criteria for containing contamination and preventing further migration. This active approach to remediation will help ensure that contamination does not continue to migrate further into the Main San Gabriel Basin and past Whittier Narrows into the Central Basin.

EPA's Response: Comment noted.

Responses to Comments from Zevnik, Horton, Guibord, McGovern, Palmer & Fognani on behalf of Cleveland Pneumatic Corporation (CPC), dated March 16, 1998

CPC Comment 1: *The EPA Proposed Plan is based on a Remedial Investigation and Feasibility Study ("RI/FS") which did not sufficiently determine the location of sources of the ground water contamination within the site to adequately select a remedy for the site. Specifically, the plan relies on ground water extraction in the mouth of the valley area for "containment" of contamination in the PVOU. However, an assessment of the available data, most of which is not presented, analysed or otherwise considered in the RI/FS, indicates that there are major sources of PCE and TCE contamination in the Puente Valley in areas upgradient of the mouth of the valley area. Implementation of the Proposed Plan might result in the significant movement of contamination from these highly contaminated source areas into the mouth of the valley area where extraction is to occur. Given the high concentration of contaminants, ground water extraction should only be considered at or near where these major sources are shown to be present in order to prevent migration into areas of lesser concentration during the extraction process at the mouth of the valley.*

EPA's Response: This comment refers to the presence of numerous areas of high VOC contamination or "hot spots" upgradient of the proposed remedial action. EPA acknowledges both the presence of these areas, as well as the need for these areas to be addressed through aggressive, site-specific remedial actions. EPA's Feasibility Study also notes that EPA fully expects and supports actions taken under the purview of the Regional Water Quality Control Board - LA Region (RWQCB), to address these local areas of high concentrations of contamination in ground water. The regional actions recommended in the proposed plan were developed assuming that facility-specific actions will continue. The specific actions taken at the mouth of Puente Valley should be designed in a manner that does not accelerate the spread of contamination from these hot spots.

CPC Comment 2: *The selected remedy for the PVOU does not appear to take into account the strong probability that the San Jose Creek could operate as a uninterrupted, highly permeable*

pathway for VOC migration from sources at the top of the valley to the mid-valley and mouth of the valley areas. This situation should be investigated further since it was not adequately addressed in the RI/FS for the site. If the San Jose Creek is a pathway, then the proposed plan should include ground water extraction along the creek.

EPA's Response: The potential for the San Jose Creek to "operate as a uninterrupted, highly permeable pathway for VOC migration" was extensively evaluated during the RI/FS process. After more than a year of sampling and analysis of migration through the creek, both in surface water and in the subdrain system, it was concluded that any contaminants migrating along the subdrain pathway would eventually be captured by remedial actions at the mouth of the valley. In addition, it was found that significant contaminant transport can only occur during "ideal" conditions, when the water table intersects the subdrain system for considerable distances. Volatilization and dilution of VOCs in the surface water occurs very quickly.

Response to Comments from the San Gabriel Valley Water Company (SGVWC), dated March 11, 1998

SGVWC Comments: *This letter supplements my statement at the public meeting held Wednesday, January 28, 1998, at La Puente High School concerning EPA's proposed plan to address ground water contamination at the Puente Valley Operable Unit ("PVOU").*

As I explained at the public meeting, San Gabriel Valley Water Company ("San Gabriel") strongly supports EPA's preferred alternative (which is Alternative 3 in the PVOU Final Feasibility Study Report). Among other things, that alternative favors ground water extractions at the B7 Well Field as part of the preferred remedial action. It also calls for the PRPs to negotiate directly with the water purveyors that operate wells in the B7 Well Field in order to make the existing water supply systems part of the selected remedy. (See generally PVOU Final Feasibility Study Report at p. 4-5.)

By letter dated October 30, 1997 to Ms. Eugenia Chow, U. S. EPA's Remedial Project Manager (copy attached), San Gabriel's President Michael L. Whitehead stated:

"San Gabriel is prepared to meet and confer with the EPA and Puente Valley Steering Committee to determine how San Gabriel's wells in the B7 Well Field or elsewhere can be integrated into the preferred remedial action."

At the January 28 public meeting in La Puente, I reiterated that commitment.

In addition, Ms. Carol Williams, Executive Officer of the Main San Gabriel Basin Watermaster, and representatives from Suburban Water Systems, City of Industry, and the Central Basin Water Association all endorsed EPA's preferred alternative. Also, it is significant that representatives of the Puente Valley Steering Committee in their comments at the public meeting did not object to EPA's preferred alternative as it relates to the B7 Well Field. Indeed, no one at the January 28 public meeting opposed EPA's preferred alternative as it relates to the B7 Well Field.

EPA's preferred alternative is the product of an exhaustive process, including a remedial investigation and feasibility study, analysis by EPA's staff and by affected parties, and recommendation by EPA's Region IX and the National Remedy Review Board. Clearly EPA's preferred remedy has broad public support, and I am aware of no opposition to the preferred alternative as it relates to the B7 Well Field. Accordingly, EPA's preferred alternative should be adopted as the appropriate remedial action in Puente Valley.

EPA's Response: Comment noted.

Response to Comments from Richard A. Sullivan, dated February 12, 1998

Richard A. Sullivan Comment: *Thank you for the Region's January fact sheet which solicits comments from the public on your proposed plan for addressing ground-water contamination by volatile organic compounds (VOCs) in the Puente Valley. The fact sheet states "These Remedial Action Objectives (RAOs) reflect EPA's regulatory goal of restoring usable ground waters to their beneficial uses -- within a time frame that is reasonable, ---."*

Preferred Alternative 3 would provide hydraulic control to prevent migration of contamination in the shallow and intermediate zones beyond the mouth of Puente Valley, and would also rely on natural attenuation for rehabilitation of ground waters in the zones. Returning ground water of the 5-mile long VOC-contaminated plume in the shallow zone to its beneficial potable uses by Alternative 3 would take decades while the dense non-aqueous phase liquids (DNAPLs) would also continue to migrate downwards and worsen DNAPL contamination in the deeper intermediate zone plume.

A more expeditious approach to Alternative 3 would be to accelerate rehabilitation of ground waters in the shallow zone plume by utilizing those existing wells in the zone that are now closed down because of VOC contamination. Adaptive intermittent pumping rather than conventional constant pumping from the existing wells would further accelerate removal of DNAPLs from the shallow zone. The extracted contaminated ground waters would flow through a treatment plant and then into the community water distribution system. Choice of multiple small plants or a large plant would depend on pipeline costs to convey water for decontamination treatment and then distribution. Removal of DNAPLs from the intermediate zone at mid-valley (Alternative 4) could also be accelerated by adaptive intermittent pumping.

The adaptive intermittent pumping approach accelerates leaching of DNAPLs from the geologic microenvironment, and the technique is outlined in my article "Pump and Treat and Wait" published in Civil Engineering magazine of the American Society of Civil Engineers. A reprint of the article is enclosed. Implementation of the adaptive pumping approach is controlled by the observational method, which recognizes uncertainty in micro-geologic conditions and chemical behavior with resulting impact upon the rate of leaching. Enclosed is an outline application of the observational method.

The intent of my comments to Alternatives 3 & 4 of EPA's proposed plan is to convey some constructive suggestions that could save time and money in restoring ground waters at Puente Valley to their beneficial uses within a reasonable time frame.

EPA's Response: The reviewer refers to intermittent pumping and the observational method as tools that may enhance the effectiveness of the selected remedy. EPA concurs that these techniques should be considered during remedial design.

Response to Law Offices of Daniel Romano on behalf of Goe Engineering Company, Incorporated (Goe), dated March 16, 1998

Response to Goe comment 1: *In 1994, the EPA completed a baseline risk assessment to evaluate the potential health effects from exposure to contaminated ground water, and to determine if any remedial actions would be necessary to protect human health or the environment. As part of the risk assessment the EPA evaluated three scenarios:*

- 1. The potential for a current resident to be exposed to ground water through domestic use;*
- 2. The potential for a future resident to be exposed to contamination in ground water through domestic use; and*
- 3. The potential for current and future workers and residents to be exposed to contamination in ground water through transport of VOCs from ground water through the foundation of a building.*

The EPA uses a "target risk range" of one person in ten thousand to one person in one million getting cancer from the contamination at the site. Risks that fall within or below this range are considered acceptable and generally do not require remediation, and risks greater than one in ten thousand warrant remediation.

The risk assessment of the first scenario, potential for a current resident to be exposed to ground water through domestic use, resulted in estimated excess lifetime cancer risks within the acceptable risk range. Even the estimated risks were overly conservative in that blending of ground water from several production wells and the current ground water treatment by water purveyors were not considered. Therefore, under the first scenario, no remedial action is warranted.

The risk assessment of the second scenario, potential for a future resident to be exposed to contamination in ground water through domestic uses, inexplicably resulted in a total estimated excess lifetime cancer risk of five in one thousand, which exceeds both the target risk range and risk to current residents. The risk assessment analysis assumed that future ground water production wells would be drilled/installed directly within eight areas or plumes that had ground water concentrations exceeding ten times the MCLs. This assumption is not only overly conservative, but unrealistic. The EPA has further assumed that ground water extracted by the water purveyor would not be treated prior to reaching any future consumers. This assumption in

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also unrealistic in that it implies not only the conduct of an unreasonable act by the water purveyor, but to do so would also be illegal. We believe that a reevaluation of this exposure scenario should be conducted, and that the exposure risks to future residents should be at least as low as the exposure to current residents, if not lower.

The risk assessment for the third scenario, potential for current and future workers and residents to be exposed to contamination in ground water through transport of VOCs from ground water through the foundation of a building, determined that the estimated excess lifetime cancer risk to current and future workers/residents was within the target risk range. The EPA also determined that there is no threat to plants and wildlife from exposure to contaminated ground water.

Finally, the EPA considers that the principal threat identified in the PVOU is the possibility that Dense Non-Aqueous Phase Liquids ("DNAPLs") may be present in the ground water. However, DNAPLs have not been observed at any of the monitoring wells installed in the PVOU. We believe that if the possible presence of DNAPLs is suspected at a specific facility, confirmation and/or removal of this threat should be the responsibility of that specific facility. Even assuming that DNAPLs exist, regional ground water extraction in the PVOU, as proposed by the EPA, may actually remobilize any possibly existing DNAPL layer and adversely impact deeper uncontaminated aquifers.

EPA Response: This comment refers to overly conservative assumptions and the existence of institutional controls as a mechanism for preventing human exposure to contaminated ground water, and the recommendation that the baseline risk assessment be conducted with that assumption in place. EPA disagrees that the baseline risk assessment is the proper place to take institutional controls into account. The role of the baseline risk assessment is to address the risk associated with a site in the absence of any remedial action or control, including institutional controls. The baseline assessment is essentially an evaluation of the no-action alternative. Institutional controls, while not actively cleaning up the contamination at the site can control exposure and, therefore, are considered to be limited action alternatives. The effectiveness of the institutional controls in controlling risk may appropriately be considered in evaluating the effectiveness of a particular remedial alternative, but not as part of the baseline risk assessment.

For the VOC contamination in ground water at the PVOU, the concept of "principal threat" does not apply, therefore it is not included in this Interim ROD.

Goe Comment II: *The EPA considered several remedial alternatives to reduce the risk from potential exposure to the contaminated ground water. The considered alternatives included:*

- 1. No action*
- 2. Ground water monitoring of the shallow, intermediate and deep zones at the mouth of the Puente Valley and at mid-valley.*
- 3. Ground water control in the shallow and intermediate zones at the mouth of the Puente Valley and ground water monitoring (the EPA's preferred alternative).*
- 4. Ground water control in the shallow and intermediate zones at the mouth of the*

Puente Valley and in the intermediate zone a mid-valley and ground water monitoring.

The primary flaw in the EPA's evaluation/development of the above remedial alternatives is the fact that neither the current nor planned site-specific remedial actions being conducted within the PVOU have been taken into account. Throughout the PVOU, several facilities, under the purview of the RWQCB, have been taking and continue to take remedial actions to treat contaminated ground water beneath and/or downgradient of their respective facilities. As correctly described in the FS report:

"[t]hese activities have resulted in, and will continue to contribute to, a reduction in existing contamination. Moreover, some of the existing activities (e.g., at the BDP/Carrier site) may serve to reduce contaminant migration within portions of the PVOU."

The BDP/Carrier site has operated a ground water extraction and treatment system since August 1986, presently pumping at a rate of approximately 500 gallons per minute (gpm). Other facilities currently conducting or planning to conduct, ground water extraction and treatment include the TRW/Monadnock, TRW/Benchmark, Spectrol Electronics, Ajax and the Lansco Die Casting facility.

In addition, source control actions to remediate VOCs within subsurface soils have been undertaken at several facilities, including the Goe/Physicians facility. The RAP for the Goe/Physicians facility has been approved by the RWQCB, and is currently being implemented and is designed to not only remove the soil contaminants but also remove any future threat to ground water from the site. Additional source control have been completed or planned at several other facilities, including: BDP/Carrier, TRW/Benchmark, TRW/Monadnock, Spectrol Electronics, Lansco Die Casting, Utility Trailer, and Acorn Engineering. The FS report itself indicates that "[t]he importance of these source-specific actions is that they have the potential to remove additional VOC mass from both ground water and the unsaturated zone."

We strongly believe that the remedial alternatives considered by the EPA are incomplete and intrinsically flawed because they do not consider the effects of the current and planned site-specific actions being taken to remediate both soil and ground water within the PVOU. The EPA has spent substantial efforts to perform ground water fate and transport models to predict VOC contamination plumes behavior in response to their proposed alternatives. The modelling effort did not take into consideration the negative effects that ground water extraction and treatment at the mouth of the Puente Valley would have on the site-specific ground water extraction and treatment systems being conducted within the valley. For example, EPA's proposed ground water extraction at the mouth of the valley would cause "hot spots" (areas of high VOC concentration), currently located beneath source sites, to migrate into less contaminated downgradient areas and away from the capture zone of existing site-specific ground water remediation systems. It is our opinion that these "hot spots" can best be remediated by the existing site-specific extraction systems. In addition, if DNAPL layers are present beneath any of these facilities, EPA's proposed ground water extraction program may remobilize the DNAPLs into less contaminated areas of the aquifer and/or deep aquifers.

EPA's Response: EPA recognizes that source control actions are occurring and agrees that these actions could reduce contaminant migration in portions of the PVOU. However, the data collected during and after the Remedial Investigation (RI) indicate that existing source control actions were not adequately containing contaminant migration. The PVSC specifically avoided the inclusion of parcel-specific source control actions in the development of remedial alternatives (See *Puente Valley Operable Unit Interim RI/FS Comment/Response Summary, Final Feasibility Summary*, Camp Dresser and McKee Inc. (July 1996), p. 12). The RI/FS therefore did not develop sufficient information for EPA to determine whether additional source control actions could be used as part of a CERCLA remedy to contain contaminant migration throughout the shallow and intermediate ground water. Nevertheless, if source control actions prove effective in controlling contaminant migration in portions of the PVOU, EPA's performance-based remedy would not require the responsible parties to develop additional unnecessary ground-water extraction facilities. EPA agrees that actions taken at the mouth of Puente Valley should be designed in a manner that does not accelerate the spread of contamination from these hot spots.

Goe Comment III: *Based upon the above facts, we believe that the EPA should develop a ground water model for the PVOU which takes into account consideration the effects that site-specific remedial actions will have in the overall reduction of VOC mass from both soil and ground water and to reduce contaminant migration. Such a realistic model would provide the necessary data to allow the EPA to consider new remedial alternatives that would effectively address the EPA's Remedial Action Objectives ("RAOs") for the PVOU.*

It is very likely that when the effects of site-specific remedial actions are properly evaluated, new cost-effective remedial alternatives could be developed which meet the EPA's RAOs for the Puente Valley. Therefore, Goe would recommend the continue evaluation of the existing site-specific remediation systems and their effect on the contaminant migration of the claimed deep-water aquifer plume, prior to the expenditure of nearly \$30 million (or more) for the implementation of the EPA's proposed alternative. In the interim, and even after a period of continued evaluation, there is no risk to human health because the water purveyors are required to treat the ground water prior to making it available to consumers.

The site-specific soil and ground water remediation systems should likely be effective in remediating the highly contaminated areas within the shallow ground water zone both in the mouth of the valley and at mid-valley locations. If, based upon the new ground water model, contaminant migration in the shallow zone at the mouth of the valley is not adequately contained, then re-injection of ground water treated by the site-specific treatment systems within the mouth of the valley (i.e., TRW/Benchmark site) could be incorporated at selected locations to properly contain the downgradient migration into water supply wells. Similarly, re-injection of ground water, treated by site-specific systems within the mid-valley area (i.e., BDP/Carrier), along Hacienda Boulevard into the intermediate zone should prevent the downgradient migration of VOCs in the intermediate zone into the mouth of the valley areas.

Similar remedial alternatives, which incorporate and compliment current site-specific

remediation systems, could be developed and implemented at significantly lower costs than EPA's preferred alternative.

EPA's Response: This comment refers to consideration of site-specific cleanups of "hot spot" contamination being conducted by individual facilities. See EPA responses to Goe Comment II above, and City comment 1D.

Response to Royall K. Brown Comments, dated March 12, 1998

Royall K. Brown Comment: *The EPAs Preferred Alternative #3 has two basic shortcomings. First it cost to [sic] much and there is a cheaper version of clean up that has not been presented to the public for comment. Second Alternative 3 does not provide for compensation to the water rate payers of Upper San Gabriel Basin who have has [sic] to pay for the clean up of water from Puente Valley Operable Unit before it is delivered to them by water retailers. Since the referenced maps show no pollution in the shallow zone of Puente Valley at the Sunset Drinking Water Wells (B7 Well Field) and there is VOC contamination in the Deep zone along N. Sunset I conclude the outflow from the shallow zone of the Puente Valley Operable unit is discharging by hydraulic pressure to the deep zone as a result of the heavy pumping of the Sunset Well Field as noted by the Puente Basin Watermaster 1994 and commented upon in the second paragraph of page 5-3 of the Final Remedial Investigation Report by the Puente Valley technical [sic] Committee and is image 266 of 283 in your Data Base. As long as Sunset Drinking Water Wells are heavily pumped it is my opinion that there is not threat that any contaminated water from the Puente Valley Operable Unit will get to Whittier Narrows and exit Upper Basin to contaminate the lower basins (Central and West).*

Based upon the above noted conclusions I propose an improvement upon Alternative #3. This improvement is to provide an incentive for the Principle [sic] Responsible Parties (PRPs) to achieve a quick clean up of Puente Valley Operable [sic] Unit to avoid the high cost of a centralized collection system at the Mouth of Puente Valley. I suggest the utilization of well head treatment. Inorder [sic] to correct for the shortcomings [sic] of Alternative #3, as noted above, the PRPs wil have to pay of [sic] all the past and future costs of cleaning up of drinking water wells in the N. Sunset Well Field. Next all of the PRPs at thier [sic] own properties will have to deater all contaminated extraction wells on thier [sic] sites on a weekly basis in all zones for as long as there is any contamination in Puente Valley.

If after a reasonable period of years the dewatering of the contaminated extraction wells by the PRPs does not prevent reoccurrence [sic] of contaminations of the wells in the N. Sunset Well field, the EPA should then impose Alternative #3 as a corrective measure.

I must note there are low cost extraction methods at low yield contaminated extractions [sic] wells the PRPs could use; such as compressed air pumping with on site collections in tanks and transport by truck to treatment facilities. Using trucks instead of high cost collection with high sunk cost piping will greatly reduce the PRPs investment in corrective equipment that Alternative

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#3 includes.

Next I need to point out that the current level of extractions by PRPs is not adequate [sic] to clean up the contamination. Image 48 of 283 of your data base from the technical [sic] committee notes the 1994-95 extraction of contaminated water was only 1067 acre-feet. This is inadequate [sic] for a quick clean up of the shallow zone. The PRPs must expand their [sic] efforts to extract contaminated water in the Puente Valley Operable Unit. A quick dewatering of the shallow zone will allow a natural infusion of clean water by natural processes. Clean water in the shallow zone will result in an inflow to the lower zones and eventual [sic] dilution of the contamination in the deep zone that supplies water to the N. Sunset Drinking Water Well Field.

Also I note the heavy pumping of wells South of the 10 Freeway and East of the 605 Freeway has caused a pumping depression to occur [sic] in that area. The N. Sunset Well Field is only a portion [sic] of the historic extractions of water that constitute this pumping hole. As long as this pumping depression continues the threat of any Puente Valley polluted ground water getting to Whittier Narrows is eliminated as Puente Basin is a minor source of water to the main Upper San Gabriel River Basin.

EPA's Response: The reviewer notes a) the absence of mapped contamination in the shallow zone in the vicinity of the Sunset Drinking Water wells, and b) the effects of deep pumping on containing contamination. The lack of mapped contamination in this area may primarily reflect a lack of data from the shallow zone. The effects of deep pumping in the B7 well field are duly noted in the Feasibility Study. These wells may be considered part of a regional remedial action if the appropriate assurances can be made on their continued pumping. In the absence of such assurances, it cannot be assumed that this pumping will indefinitely prevent the migration of contamination away from the mouth of the Puente Valley.

Response to Glen E. Powell, CPM Comment, dated January 21, 1998

Glen E. Powell Comment: *Since the pollution of the San Gabriel Valley covers such a large area, 167 Square Miles, and has been polluted for such a long time, the solution by a Responsible Government should be as simple and fair to all concerned as possible. Therefore I am in favor of solution NO.3.*

This solution could be solved in the following manner, which has now been put into motion with our aging sewer problem, by assessing every property within this area. Trying to single out any small group for our present pollution problem is unfair and discriminatory, because of all the pollution caused by cesspools and septic tanks before the sewer system was installed. Another source was from all of the dump sites where waste material was hauled from all these properties and contributed to this present day pollution problem. A lot of this past pollution was caused by unknowing employees during our war years working for the safety of our Country, for this Government and on the Instructions of this government. These contracted small and large Companies employees, while working on Government Contracts during this war time period

unknowingly contributed to most of this pollution in experiments. This now leaves this pollution the problem of the present owners of the land and our Government who ordered and sanctioned this work to save our country. ALL [sic] who have lived in this valley as long as I have (over 50 years) have witnessed all of the above. A reasonable Insurance [sic] plan should be available to ALL [sic] who work with, manufacture or haul TOXIC [sic] material the same as car insurance is required before they handle this type of material.

As the world becomes smaller and more interdependent, and our country becomes even more pluralistic, we have got to find ways to lead by exercising tolerance toward everyone. The Civil Rights Act was passed in 1964 to insure [sic] these rights. Respect these rights in your decision.

EPA's Response: EPA does not have the legal authority to finance CERCLA (Superfund) response actions by levying assessments on all property owners. EPA and the Regional Board have undertaken an extensive investigation of the businesses and other facilities in the San Gabriel basin (including dump sites) that might have been sources of VOC contamination in the ground water. Of those facilities that EPA has identified as sources of contamination, EPA has not singled out any subgroup for cleanup responsibilities. EPA has no evidence that cesspools and septic tanks are sources of the VOCs that are the subject of the CERCLA response actions in the PVOU. Businesses that contracted to provide materials and services to the federal government during war time are not exempt from liability for cleanup costs because their contamination was not caused by an act of war (See 42 U.S.C. § 9607(b)).

Response to the Puente Valley Steering Committee (PVSC) Comments, dated March 13, 1998

PVSC Initial Comment: PVSC incorporates herein its prior submissions to EPA with respect to the PVOU, including but not limited to:

1. Summary Report, San Jose Creek, Surface Water/Ground water Interaction (Camp Dresser & McKee Inc., February 1, 1994).
2. Puente Valley Operable Unit, Interim RI/FS, Draft Remedial Investigation Report and Appendices (Camp Dresser & McKee Inc., December 12, 1995).
3. Puente Valley Operable Unit, Interim RI/FS, Draft Feasibility Study Report and Appendices (Camp Dresser & McKee Inc., March 1996).
4. Puente Valley Operable Unit, Interim RI/FS, Comment/Response Summary; /Final Feasibility Study (Camp Dresser & McKee Inc., July 1996).
5. Letter of April 29, 1997 from Robert M. Walter of TRY to Brett P. Moffatt of EPA re: Puente Valley Operable Unit, San Gabriel Valley Superfund Site, Analysis of Applicable and Relevant and Appropriate Requirements ("ARARs").
6. Puente Valley Operable Unit, Interim RI/FS, Final Remedial Investigation Report and Appendices (Camp Dresser & McKee Inc., May 30, 1997).
7. PVSC Comments on EPA's 5/30/97 PVOU FS, submitted as Attachment A to letter of August 15, 1997 from Robert M. Walter of TRY to Brett Moffatt of EPA.
8. Comments of the Puente Valley Steering Committee to United States Environmental

Protection Agency Superfund National Remedy Review Board regarding Puente Valley Operable Unit, San Gabriel Valley, California, Feasibility Study (October 30, 1997) (submitted with letter dated October 28, 1997).

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To the extent that any of these documents, or any part of them, are not already included in the administrative record relating to the PVOU, PVSC hereby requests that such document(s) be included in the record.

EPA Response: EPA has included these documents in the administrative record. Documents 1-4 and 6 do not contain "comments" on EPA's proposed plan or the final RI/FS. EPA has responded to the comments contained in document 8 in its "Responses to Issues Raised by the Puente Valley Steering Committee for the San Gabriel Valley Superfund Sites, Puente Valley Operable Unit, City of Industry, CA," November 24, 1997, which is included in the administrative record. The comments contained in document 5 are restated in document 7. EPA addresses the comments contained in documents 5 and 7 in this Responsiveness Summary.

PVSC Comment 1: *Under "Site Description" on page 2, the Proposed Plan states that (a) the PVOU is within the San Gabriel Valley, (b) ground water in the San Gabriel Valley is contaminated with VOCs, and (c) the ground water from San Gabriel Valley flows into the Central Basin, and "could affect the water supply of the Los Angeles metropolitan area." The Proposed Plan and ROD should include the clarification that ground water contamination in the PVOU has never impacted the Central Basin, and is not likely to in the future even if no CERCLA regional action is implemented.*

EPA's Response: In the absence of significant ground-water pumping by production wells within the San Gabriel Basin, in the vicinity of the mouth of the Puente Valley, ground water flowing out of the Puente Valley would eventually travel west and southwest towards Whittier Narrows. This natural flow direction is documented in historical maps of the potentiometric surface prior to significant pumping in the area.

For the effect of ground-water pumping near the mouth of the valley to be considered appropriate as a means of containing contamination, these wells would need to be considered part of the CERCLA remedy. This option is left open in the Record of Decision, as well as in the Proposed Plan. Unless pumping at these wells is considered part of the CERCLA remedy, it cannot be assumed that this pumping will continue indefinitely, thus preventing migration of Puente Valley contamination through Whittier Narrows, and into the Central Basin.

PVSC Comment 2: *In the sixth paragraph of "Site Description," it is stated that "All aquifers...in the PVOU are considered to be municipal water sources...." The Proposed Plan should mention, however, that the entirety of the shallow zone is non-potable due to concentrations of total dissolved solids (TDS) and nitrates, compounds unrelated to industrial activities, which exceed drinking water standards. Also, the Proposed Plan should mention that existing governmental controls prevent exposure to any contaminated ground water.*

EPA's Response: The data collected to date indicates that portions of the shallow zone are non-potable without treatment. EPA does not know that the entirety of the shallow zone is non-potable.

PVSC Comment 3: *At the end of "Site Description" it is stated that "Figures 2 and 3 show 1996 VOC concentrations in the shallow and intermediate zones." In meetings with the PVSC, EPA has agreed that such depictions represent substantial simplifications of the actual magnitude and extent of VOC distribution. The figure referenced in this Proposed Plan, therefore, is misleading and inaccurate. EPA's revised plume maps which were presented in the January 28 public meeting and based in part on data collected by the PVSC in October and November 1997 are also misleading, as they were generated using some data that are 5 years old or older. Furthermore, the deep zone VOC maps rely heavily on inactive production wells where the VOCs are likely derived from shallow, and not "deep", contamination.*

EPA's Response: Figures 2 and 3 in the ROD provide supplemental text explaining that they are simplified representations of the magnitude and extent of the VOC contamination in the PVOU.

PVSC Comment 4: *In its "Assessment of Health Risk" on page 4, EPA concludes that the calculated risk of 5×10^{-3} for the shallow zone represents "the highest exposure that is reasonably expected to occur at the site". This calculated risk, however, assumes installation of a domestic water supply well beneath privately owned industrial property, and the distribution of that untreated water to the public for 70 years, both of which are prohibited under existing laws and regulations. It is inappropriate to (a) state that such prohibited acts are "reasonably expected to occur," and (b) base calculated risks on portions of Puente Valley (i.e. beneath individual facilities) which EPA itself has explicitly stated, in writing, are not to be considered in the PVOU remedy evaluation process. Furthermore, current concentrations are significantly below the concentrations used by EPA in their risk assessment due to the on-going remediation at individual facilities.*

EPA's Response: See EPA response to City Comment IE1.

PVSC Comment 5: *Further in the "Assessment of Health Risk", EPA states that "The (emphasis added) principal threat identified in the PVOU is the possibility that DNAPLs are present in the ground water...", despite the fact there is no direct evidence that DNAPLs exist today. EPA itself acknowledges that, at best, data from "some areas suggest the possible presence of DNAPLs" (emphasis added). Developing a remedy based on the possibility of a threat is inappropriate.*

EPA's Response: For the VOC contamination in ground water at the PVOU, the concept of "principal threat" does not apply, therefore it is not included in this Interim ROD. The remedy was not developed to address DNAPLs.

PVSC Comment 6: *In the first full paragraph on page 7, in the introduction to the alternatives description, EPA states: "EPA considered several alternatives to reduce risk from potential exposure to the contaminated ground water." (emphasis added). This statement is made despite the fact that no quantifiable reasonable risk of exposure currently exists, nor is one expected in the future. Furthermore, the Plan states that EPA's alternatives are "designed for migration control, rather than mass removal." It should be noted that migration control does not reduce the risk for potential exposure in the PVOU, because no complete exposure pathway exists.*

EPA's Response: EPA addressed the analysis of exposure pathways in its response to City Comment IE1. The PVSC previously agreed with EPA that there are completed exposure pathways in the PVOU (See *Puente Valley Operable Unit Interim RI/FS Comment/Response Summary, Final Feasibility Summary*, Camp Dresser and McKee Inc. (July 1996), p. 14).

The Baseline Risk Assessment found a total estimated excess lifetime cancer risk for potential future residents of five in one thousand (5×10^{-3}). This level of risk warrants action at the PVOU. EPA's selected remedy is an interim action intended to control the spread of contamination. Although this action will not eliminate the risks posed by ground water upgradient from the mouth of Puente Valley, it will prevent contamination from migrating to waters that are currently clean or less contaminated and will therefore limit the extent of ground water contamination posing unacceptable health risks.

PVSC Comment 7: *EPA's cost estimate for Alternative 3 (\$27.8 million) does not include the replenishment costs for extraction of groundwater in the San Gabriel Basin without beneficial use in the Basin. Although the treated groundwater would be discharged within the San Gabriel Basin, if the discharge results in flow via surface water outside of the Basin, replenishment costs may be necessary. Such replenishment costs are currently \$245/ac-ft/year, and thus could total several million dollars over the life of the remedy.*

EPA's Response: See EPA Response to City Comment IF.

PVSC Comment 8: *In the description of Alternative 3, EPA proposes performance criteria for the shallow and intermediate zones. The proposed criteria are identical to those proposed by EPA early in 1997, and do not reflect any of the modifications suggested by the PVSC representatives in its meeting with EPA on October 3, 1997. The PVSC's suggested changes include:*

- *Using terminology such as "restrict" instead of "prevent"*
- *Modifying "migrating" with an adverb such as "significantly"*
- *Removing "possibly" from before "a multiple of MCLs", or otherwise affirming the use of multiple of MCLs.*
- *Recognizing that the buffer zone may be defined differently for different areas of the mouth of the PVOU, and should be based on a number of factors including the aquifer characteristics, use of aquifer, access restrictions, etc.*

EPA's Response: EPA has permitted the PVSC to provide substantial input throughout the

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process of developing the performance criteria specified in the ROD. The final performance criteria reflect the last two changes suggested in this comment. EPA did not adopt the first two suggested changes because they would create ambiguity in the criteria.

PVSC Comment 9: *The description of Alternative 3 continues to imply that the shallow zone remedy will be a regionally-based action. The data collected by the PVSC in the fall of 1997, which EPA agreed to incorporate into the Proposed Plan, continue to strongly support the existence of several shallow plumes rather than a single broad plume as depicted in Figure 2, which are most appropriately addressed by a combination of facility-specific and sub-regional actions combined with natural attenuation. This distinction is critical to selecting and designing a cost-effective remedy. The EPA has supported monitored natural attenuation as a viable alternative in OSWER Directive 9200.4-17- Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites (November 1997), in which it is stated that:*

"...its use may be appropriate as a component of the total remedy, that is, either in conjunction with active remediation or as a follow-up measure."

Moreover, the EPA went on to state that:

"For example, evaluation of a given site may determine that, once the source area and higher concentration portions of the plume are effectively contained or remediated, lower concentration portions of the plume could achieve cleanup standards within a few decades through monitored natural attenuation, if this time frame is comparable to those of the more aggressive methods evaluated for this site. Also, monitored natural attenuation would more likely be appropriate if the plume is not expanding, nor threatening downgradient wells or surface water bodies, and where ample potable water supplies are available. The remedy for this site could include source control, pump-and-treat system to mitigate only the highly-contaminated plume areas, and monitored natural attenuation in the lower concentration portion of the plume. In combination, these methods would maximize ground water restored to beneficial use in a time frame consistent with future use of the aquifer, while utilizing natural attenuation processes to reduce the reliance on active remediation methods (and reduce cost)."

The PVSC believes the aforementioned statements support the appropriateness of facility-specific actions coupled with monitored natural attenuation.

EPA's Response: OSWER Directive 9200.4-17, Use of Monitored Natural Attenuation, is quoted as a basis for recommending "facility-specific actions coupled with monitored natural attenuation." The performance-based approach adopted for this operable unit, in addition to EPA's support of RWQCB-led actions to address contamination at individual facilities and sources, are consistent with this recommendation. However, it should be noted that the quoted Directive specifically states that such an approach is appropriate in conditions where "the plume is not expanding, nor threatening downgradient wells... [and where] ...ample potable water supplies are available." The directive also states that under such conditions, the remedy "could include source control, pump-and-treat system[s] to mitigate only the highly-contaminated plume areas, and monitored natural attenuation..." The pump-and treat system described in the Proposed Plan is designed to only address areas of relatively high concentrations in the Shallow

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Zone (greater than 10 times the MCL), and no mention is made of active remedial actions in areas of lower concentrations. Nonetheless, it is reiterated that the performance-based approach allows for flexibility in the selection of specific remedial activities.

PVSC Comment 10: *On pages 3 and 4 of EPA's document entitled "Response to Issues Raised By The Puente Valley Steering Committee For San Gabriel Superfund Site, Puente Valley Operable Unit, City of Industry, CA" (November 24, 1997), EPA expresses concerns regarding the PVSC's use of contaminant transport modelling. Specifically, EPA states that "Although it is typically necessary to make simplifying assumptions of this type in building numerical models, it must be clearly understood that at some scales the model cannot accurately predict the behavior of the natural system." The PVSC acknowledges the uncertainties inherent to any modelling. However, contaminant transport models are widely accepted tools to be used in concert with all field data to assist in predicting the future distribution of VOCs. At no time has the PVSC used the model at a scale where the model would be inaccurate. All models must be refined by both performing sensitivity analysis and collecting/analysing new data where gaps exist. As EPA has acknowledged, the PVSC has performed both of these refinements, and will continue to do so as new data become available.*

Furthermore, EPA notes that "measurement of migration across an individual facility at the mouth of Puente Valley supports transport velocities of an order of magnitude greater than those predicted by the model." It should be noted that (a) throughout the entire PVOU, there is only one small geographic area where the model may have underestimated flow rate, (b) the underestimate is considerably less than "an order of magnitude", (c) the underestimate occurs in the flow model and thus would affect particle tracking simulations as well as estimates of the contaminant transport, and (d) such underestimates have been resolved by the collection of additional data, which the PVSC has completed.

In summary, the PVSC believes that transport modelling is an essential tool to be used to assist in the interpretation of existing data and provide reasonable prediction of future VOC distribution.

EPA's Response: Comments regarding uncertainties associated with transport modeling, and the PVSC's efforts to use these tools appropriately are noted.

PVSC Comment 11: *On page 5 of EPA's November 24 document, EPA noted that the PVSC's detailed documentation of the occurrence of natural attenuation relied on "the results of facility-specific activities". This is a true statement. However, EPA also states that the use of these data "was inconsistent with the limitation of the scope of the RI/FS". Yet, EPA's Risk Assessment for the PVOU is wholly based on these facility-specific data. As noted in comment No. 4 above, EPA then extrapolated these data into an unrealistic exposure scenario that violates applicable regulations, upon which the proposed remedy selection is partially based. We do not understand how the facility-specific data can be rejected as inconsistent with the scope of the RI/FS on one hand, and be a significant factor in remedy selection on the other.*

EPA's Response: The comment notes that EPA suggested that facility-specific data are inappropriate for assessments of natural attenuation, yet were used by EPA in the Preliminary Baseline Risk Assessment. It is inappropriate to only consider conditions at individual sites, when assessing the potential role of natural attenuation in addressing the regional spread of contamination. Site-specific data were considered in the risk assessment, as a means of assessing the potential effects of contaminants in water ingested by the general public in areas of high concentrations. This approach is consistent with EPA risk assessment guidance.

PVSC Comment 12: *On page 6 of EPA's November 24 document, EPA states that Suburban Water Systems (SWS) discontinued use of their Mid-Valley Wells because of the presence of VOCs. It is a matter of the public record that the inactive status of these wells was not due to VOCs, but rather the result of nitrate and TDS concentrations which no longer were at "manageable levels."*

Furthermore, on this page EPA cites the recent proposal of Rowland Water District to install a water supply well in the PVOU as proof that "ground water in the Puente Basin may therefore soon become a source of drinking water in the PVOU". EPA neglects to mention that (a) the proposed well would be completed in deeper zones where contamination is minimal, and not the shallow zone, where both the PVSC and EPA are concerned about TDS, nitrate, and VOC concentrations, (b) if the well were installed, it would be equipped with treatment capability, hence there would be no exposure pathway, and © EPA itself has already rejected Rowland's proposal for well installation.

EPA's Response: The comment states that the Suburban (SWS) wells within the Puente Valley were shut down because of nitrate and TDS concentrations rather than because of the presence of VOCs. EPA has received conflicting information regarding the reason these wells were shut down. One source involved with the shut-down of these wells suggested that the nitrate and TDS values were indeed manageable if the wells were operated in an intermittent fashion to accommodate peak demands, because of the ability of the purveyor to blend the water in the system. However, when high VOC levels were detected, it was no longer feasible to look at blending as an option to meet drinking water standards.

The comment also refers to EPA's suggestion that the recent proposal of Rowland Water District to install a water supply well in the PVOU suggests the potential for Puente Valley ground water to be considered as a future source of water supply. It should be noted that although the proposed well would indeed be completed in deeper, relatively uncontaminated zones, and that it would include a treatment system, the fact that this proposal underscores the value of this water supply remains. The statement that EPA has rejected Rowland's proposal for well installation is incorrect.

PVSC Comment 13: *On the matrix evaluation of Alternatives (page 5), EPA states that Alternative 2 "does not meet the criterion" for four of the evaluation criteria. As commented previously to EPA, the alleged failure to meet the criteria is predicated on the fact that EPA*

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assumed in evaluating Alternative 2 the illegal delivery of contaminated drinking water to the general public. The PVSC asserts that a legitimate monitoring alternative should not be based on illegal actions.

EPA's Response: Alternative 2 consists of ground-water monitoring. This alternative does not meet four of the CERCLA evaluation criteria (overall protectiveness; compliance with ARARs; long-term effectiveness and permanence; reduction of toxicity, mobility or volume through treatment) because it fails to prevent the continued spread of ground-water contamination.

In its evaluation of alternatives, EPA did not assume the illegal delivery of contaminated drinking water to the general public. Instead, EPA considered the ability of each alternative to control the migration and use of contaminated ground water. Since Alternative 2 does not provide for ground-water extraction or well head treatment, this particular action would not limit the extraction, distribution and use of contaminated ground water. Nevertheless, EPA's assumptions regarding the existence or absence of regulatory requirements on the use of contaminated ground water do not affect EPA's determination that Alternative 2 would not adequately control contaminant migration.

PVSC Comment 14: *In the description of Alternative 2, EPA states that it "does not have any ground water containment, extraction, treatment, conveyance, or discharge components." This statement is inaccurate. EPA's Alternative 2 includes the continued extraction and conveyance (without the current treatment) of ground water from the intermediate zone by the B7 wellfield, which EPA later acknowledges would indeed "provide containment of the intermediate zone at the mouth of the valley." Therefore, Alternative 2 does, in fact, include active ground water containment and extraction.*

EPA's Response: Although the technical evaluations of Alternative 2 in EPA's Feasibility Study consider the effects of regional ground water extraction in the "B7 well field," the costs of this extraction and required treatment are not considered. As explained in the Feasibility Study, regional ground water pumping is considered in hydraulic evaluations of ground water flow because it is an essential and dominant factor affecting the direction and velocity of ground water movement. However, because Alternative 2 does not consider this extraction to be part of the specific remedy, the costs for actually undertaking this extraction are not considered.

EPA Response to PVSC Comments on EPA's 5/30/97 PVOU FS "(Attachment A)" Incorporated by Reference into Comments on the Proposed Plan

PVSC Attachment A Comment 1: *Section 1.1 - EPA's text states "...the development of alternatives for remedial action to address shallow groundwater contamination that should be addressed through parcel- or source-specific actions are not goals of this RI/FS." This is inconsistent with the remedial alternatives developed by EPA in Section 4 that include shallow groundwater remedies.*

EPA's Response: The RI/FS did not address parcel-specific contamination. These source control actions are under the purview of the RWQCB. The remedial alternatives developed by EPA in Section 4 address regional shallow ground water contamination, which is consistent with the goals of the RI/FS.

PVSC Attachment A Comment 2: *Section 1.1.3 - Same comment as above.*

EPA's Response: Same as response above.

PVSC Attachment A, Comment 3: *Section 1.2, end of second paragraph - EPA adds the sentence "In addition, while some of the releases may have taken place years, if not decades in the past, the potential exists that such releases continue at this time." The PVSC's July 1996 FS had stated, with EPA's concurrence, that "The PVSC is aware of no evidence nor have any data been collected during this RI/FS to suggest that releases are continuing." EPA's statement is misleading and inconsistent with data gathered during the RI, which found no evidence that releases are still occurring. No risk from potential ongoing releases was quantified in the EPA risk assessment, which also lacked evidence of ongoing releases. This statement should be deleted.*

EPA's Response: Many of the industrial and commercial activities that caused the release of VOC contamination are continuing in the PVOU. EPA has evidence that releases from some facilities may have occurred as recently as the 1990s. The potential for future releases of VOCs to the ground water still exists.

PVSC Attachment A, Comment 4: *Section 1.2.4 - Most of the last two paragraphs of the PVSC's Section 1.2.4 have been deleted. These paragraphs described the poor water quality and corresponding lack of domestic use of groundwater in Puente Basin, and also described Watermaster Rule 28 and the effectiveness of existing wells and institutional controls in providing plume migration control. At least some of the deleted text appears to have been relied upon in Section 4. The deleted information describes existing conditions in the PVOU and is relevant to analysis of remedial alternatives.*

This section omits all text stating that groundwater in the Puente Basin has high concentrations of TDS and nitrates, which, coupled with poor aquifer yields, largely deters present and future use of the groundwater for potable supply. The discussion in this section should include the fact that the limited amount of groundwater extracted in the Puente Basin is used for irrigation only, and is not suitable for human consumption because of high nitrates and TDS.

The resulting text also completely omits information about both existing and potential additional Watermaster actions and institutional controls that have been used, and/or could reasonably be expected to be used, to control migration. This section should include a description of the Watermaster system of water use controls, which effectively precludes private domestic wells both in the PVOU and in the Main San Gabriel Valley, and limits the production of groundwater

for potable uses to regulated public water supply systems. It should also include a discussion of the containment of groundwater that is occurring as a result of the operation of the "B7" wellfield by water purveyors, and the water management objectives of Watermaster Rule 28. This information is relevant to the identification of pathways of risk, remediation goals, and remedial action objectives. The lack of this information makes the subsequent identification of domestic consumption as the pathway of risk (Section 3.1.2.3) misleading, in so far as it implies that there are or may be pathways other than through a limited number of public water supply systems.

EPA's Response: The State of California has identified the ground water in the PVOU as a source of drinking water. In addition, not all PVOU ground water has high levels of nitrate and total dissolved solids (TDS) or poor aquifer yields that deter its use as drinking water. Puente Basin ground water has been used as drinking water in the past.

EPA included a discussion of the Main San Gabriel Valley Watermaster regulations and other exposure-control mechanisms in section 1.5.2 of the FS. These institutional controls are not relevant for identifying risk pathways, remediation goals or remedial action objectives. See EPA responses to City Comment IE1 and Goe Comment I. EPA does not assume the effectiveness of institutional controls when assessing site risks or evaluating remedial alternatives against the "no-action" alternative.

EPA discussed B7 well field pumping in the FS and included the effects of this pumping in the development and analysis of the remedial alternatives.

PVSC Attachment A, Comment 5: *Section 1.3 - EPA's text refers to a target completion date of May 1997 for the final RI report. The text should be changed to refer to the actual submittal date of May 30, 1997.*

EPA's Response: Comment noted.

PVSC Attachment A, Comment 6: *Section 1.3.1 - Starting at the top of page 1-14 with "However, similar materials...", the concept of laterally extensive shallow, intermediate, and deep groundwater zones is introduced. The text suggests more extensive laterally-transmissive layers and less vertical confinement than was described in the FS prepared by PVSC. However, the FS does conclude that there is not a great difference in hydraulic conductivity between the alluvium and the non-water bearing bedrock. A discussion has been added regarding the relative hydraulic conductivity of the shallow, intermediate, and deep aquifers. A range of hydraulic conductivity for the three aquifers should be provided. Also, these low hydraulic conductivity values should be compared and contrasted with the typical range of higher hydraulic conductivity in the more permeable aquifers in the Main San Gabriel Basin.*

EPA has deleted much of the discussion on the predominance of fine-grained sediments throughout the Puente Valley. This discussion should be re-inserted. This is a significant

feature that affects the quantity and velocity of both groundwater flow and contaminant transport.

EPA revised the text to speculate that "the deep zone may be correlated" between MW6-62 and MW6-71. Since this interpretation is inconsistent with the hydraulic heads, is not apparent in geophysical logs, and is not used in subsequent analyses, this is speculation which should be deleted.

There is an apparent typo at the beginning of the paragraph which starts "At an upgradient of mid-valley..." that makes this sentence confusing.

EPA's Response: The revised FS text attempts to underscore the heterogeneity of the alluvial sediments, and to explain that the three "aquifers" have been identified as a means of simplifying the natural system for analytical and numerical purposes. Discussions of their properties would suggest a better defined layering than is the case. The discussion of relative hydraulic conductivity clearly demonstrates the finer grained nature of the Puente Valley sediments compared to those of the Main San Gabriel Basin. Typo noted.

PVSC Attachment A, Comment 7: *Section 1.3.4 - The PVSC's third bullet (regarding subdrain flow with supporting calculations) has been eliminated and compressed into a weaker single sentence at the end of EPA's second bullet. EPA has deleted calculations that support the statement that the flow through the subdrain is relatively less than the discharge to the weepholes. The subdrain flow calculations and analysis should be retained to support the conclusions.*

The PVSC's last bullet (regarding VOC migration in the subdrain) has been revised. The change in wording assumes the need for a remedy. This speculation, which is not supported by field data, should either be deleted or qualified.

EPA's Response: Revisions to this section were made for the purpose of simplifying the discussion, and to focus on the issues pertinent to the FS.

PVSC Attachment A, Comment 8: *Section 1.4.1.1 - EPA has deleted in its entirety PVSC's discussion of ground water concentrations that have decreased by orders of magnitude where facility-specific remedial action under the purview of the RWQCB has been and is occurring. This discussion should be re-inserted.*

EPA's Response: For the purposes of simplification and to focus technical discussions on matters pertinent to the objectives of the FS, sections of earlier versions of the FS were removed or modified. Comment noted.

PVSC Attachment A, Comment 9: *Section 1.4.1.1 - EPA's "shallow groundwater" discussion is based on data from facility wells that are part of the EPA database but were not a specific*

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component of PVSC's RI scope of work. This changes the concept of the "shallow groundwater being addressed by RWQCB" to say that regional groundwater "includes all groundwater contamination that has migrated offsite of facilities". This shift in focus pervades EPA's FS and means that the current FS is attempting to develop remedies and recommendations where no data has been developed to support them. It is arbitrary and capricious to expand the FS beyond the scope of the RI data.

EPA's Response: EPA did not change the concept of shallow ground water.

PVSC Attachment A, Comment 10: *Section 1.4.1.1 - EPA's reference to Table 1-2 on page 1-19 is incorrect. The reference apparently should be to Table 1-11, which is a new table. This table is incorrect, because of the inclusion of shallow facility wells in the east valley as being in the intermediate and deep zones, rather than the shallow zone.*

EPA's Response: Comment noted.

PVSC Attachment A, Comment 11: *Section 1.4.1.1 states "As the result of downward hydraulic gradients and available pathways, VOCs have also spread to the intermediate zone and portions of the deep zone in Puente Valley." No evidence exists for available pathways. EPA uses downward gradients as the sole basis for asserting vertical migration occurs, and ignores all other data. Additionally, the ground water model, which EPA agrees is a reasonable representation of the hydrostratigraphic environment, shows that little or no vertical leakage occurs.*

EPA's Response: The ground water model is a gross simplification of the natural system. The layering in the Puente Valley is not well defined. It is more reasonable to assume that low-conductivity layers are not continuous than to assume there are no pathways. Other mechanisms for contaminant migration into the intermediate and deep zones include the introduction of DNAPLs that may have sunk into these horizons because of their specific gravity.

PVSC Attachment A, Comment 12: *Section 1.4.1.1 states "...it appears that most of the contamination detected in the production wells is emanating from the intermediate zone." Also stated several paragraphs later is "...VOC concentrations from production wells are likely a combination of higher concentrations from the intermediate zone and nondetect concentrations from the deep zone." There is no mention of the potential for annular leakage from a shallow zone source. Additionally, given the high flux from the Main San Gabriel Basin, compared with the relatively low contribution from Puente Basin, the known concentrations in the intermediate zone do not seem sufficiently elevated to produce the concentrations seen in the production wells.*

EPA's Response: Hypothetical sources of contamination in production wells discussed in the FS are consistent with observed conditions.

PVSC Attachment A, Comment 13: *Section 1.4.1.1 - For the intermediate zone, EPA describes*

the extent of VOC contamination in the "Mouth of Valley", "Mid-/Central Valley", and "East Valley" areas. EPA did not produce a plume map for the intermediate or deep zones, but rather created separate figures for PCE and TCE values in "wells screened across multiple zones" (Figures 1-16 and 1-17) where the concentrations are posted. EPA's modelling (Appendix B) does have a Figure B-9 which shows a "deep" VOC contamination plume, but PVSC believes this is in what EPA describes as the intermediate zone in the FS text. This should be clarified.

EPA's Response: Comment noted.

PVSC Attachment A, Comment 14: Section 1.4.1.1 - In discussing the intermediate zone contamination at the mouth of the valley, EPA includes a new section "PCE and TCE Concentrations Versus Time at Mouth of Valley Production Wells" that references Figures 1-18 through 1-25. Figures 1-18 and 1-19 are incorrectly referred to on page 1-26 as "Figures 11 and 12". The table in the middle of page 1-22 shows the average 1995 PCE concentrations in three production wells, including B11B and B7C. PCE is shown as "ND", which does not appear to be in agreement with Figures 1-18 and 1-20 and text on page 1-26 that describes PCE concentrations in these wells as having "generally increased from the early 1980s to the mid 1990s." EPA's interpretation of the data shown on these figures implies that there are continuing increases in PCE concentration, but since the late 1980s this does not appear to be the case for well B7C. PCE data for well B11B appears to be relatively stable since about 1993. EPA's interpreted increasing trend in TCE and PCE concentrations may be an artifact of improved analytical methods and/or sample collection techniques since the early 1980s, when quantitation limits for these compounds were typically 5 µg/l. EPA uses inconsistent vertical scales on Figures 1-18 through 1-25 which make the results misleading. If plots of TCE versus time in wells B7C and B11B (Figures 1-19 and 1-21, respectively) were plotted on the same vertical scale used for PCE (Figures 1-18 and 1-20), then it would be apparent that TCE concentrations in these wells have not been increasing. Furthermore, during the past decade, VOC concentrations in most of the production wells at the mouth of the valley have exhibited a steady or decreasing trend.

EPA's Response: Comment noted. The data presented in the FS may be interpreted in a variety of ways by the reader. The interpretations offered are considered generally consistent with the data shown.

PVSC Attachment A, Comment 15: Section 1.4.1.1 - The last paragraph on page 1-22 refers to a non-existent Table 1-3 which may be Table 4-1.

EPA's Response: The comment correctly notes that the reference in the FS to Table 1-3 is incorrect. The information is contained in Table 4-1 and Figures 1-18 through 1-25 of the FS.

PVSC Attachment A, Comment 16: Section 1.4.1.1 - At the bottom of page 1-23, EPA inappropriately suggests that the similarity in water quality results in SWS wells is attributable to the purging methodology; the text is inconsistent with the language that the PVSC and EPA

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agreed to for the Final RI Report and incorrectly refers to the SWS wells as being gravel-packed.

EPA's Response: Comment noted.

PVSC Attachment A, Comment 17: *Section 1.4.1.1 - There is considerable confusion regarding the designation of a "deep" zone in the east valley, the depth of this zone, and, if it exists, whether it is correlatable with "deep" zones in mid-valley and mouth of the valley. Section 1.4.1.1 appears to show the same high concentrations of VOCs in the intermediate and deep zones in the east valley. EPA appears to be relying on the same well data for both zones, which is not valid.*

EPA's Response: See response to next comment.

PVSC Attachment A, Comment 18: *For the "deep" zone discussion beginning on page 1-24, the first sentence refers to two non-existent FS sections. The cited sections are actually in Appendix E of the PVSC's Final RI Report. Concentrations are only discussed for mid-/central valley and east valley since no VOCs have been detected in the deep zone in the mouth of the valley. The wells used by EPA to represent the deep zone in mid-/central valley are MW6-62 and MW6-71. As stated earlier, the RI data do not support a correlation of the deep zone between these two wells. For the east valley, EPA states that the deep zone is monitored by MW6-81 and "10 facility wells located near San Jose Creek on the north side of the east valley bedrock high." The PVSC does not believe that these wells should be considered deep. EPA's interpretation of a deep zone in the east valley is likely incorrect. It is more likely, based on the RI findings, that the deep zone pinches out near the mid-valley area. At the very least, EPA should reiterate the relatively shallow depth of the "deep aquifer" in that area.*

EPA's Response: EPA agrees that the extent of the deep zone may need to be expanded further, however for the purposes of this Interim Action, these differences of interpretation of the East Valley are not significant.

PVSC Attachment A, Comment 19: *Page 1-20, First Bullet - According to the data listed in Table 1-7, the VOC concentrations at this location are not greater than 100 times MCL as stated, but between 20 and <100 times MCLs.*

EPA's Response: EPA disagrees with this comment, see Figure 1-10 in the FS.

PVSC Attachment A, Comment 20: *The following sections of the FS contain what the PVSC believes to be incorrect references to east valley facility wells as being "deep" or "intermediate", rather than "shallow":*

- *Page 1-21, Paragraph 4 - Facility wells in the east valley area should not be considered as part of the intermediate zone, based on their screened intervals*

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- *Page 1-21, Paragraph 7 - The statement that intermediate zone VOC concentrations generally are higher in the east and mid-valley area is incorrect, because the facility wells in the east are shallow, not intermediate*
- *Page 1-22, First Table - The east valley monitoring wells, which are listed as having PCE concentrations of ND to over 444 $\mu\text{g/l}$, are shallow, not intermediate wells*
- *Page 1-24, Paragraph 1 - The 12 facility monitoring wells listed as intermediate wells in the east valley are shallow monitoring wells*
- *Page 1-24, Paragraph 4 - The statement that VOCs have been detected upgradient from mid-valley is incorrect, because no VOCs were detected in MW6-81 and the 10 facility wells are shallow wells*
- *Page 1-24, Paragraph 5 - The facility monitoring wells in the east valley should not be included as part of the deep zone*
- *Page 1-24, Paragraph 6 - Including facility monitoring wells in the east valley as deep wells is inaccurate*
- *Page 1-25, Paragraph 3 - The statement that elevated levels of VOCs were detected in the deep zone, based on the concentrations in the facility wells, is incorrect, because these wells are screened in the shallow zone*
- *Page 1-25, Paragraph 4 - The reported highest PCE concentration of 335 $\mu\text{g/l}$ is from Ajax well B-19, which is screened from 20 to 40 feet bgs, and the reported highest TCE concentration of 1,036 $\mu\text{g/l}$ is from Ajax well P-02, which is screened from 40 to 45 feet bgs. Both of these wells should be considered shallow wells.*
- *Figures 1-26 through 1-36 - These figures are inaccurate, because the facility wells are actually screened in the shallow zone, and not the intermediate and deep zones*

EPA should re-designate all of these referenced wells as shallow, rather than intermediate or deep.

EPA's Response: Because the layering of the Puente Valley, particularly in its eastern extent, is so ill-defined, discussions of which horizon individual monitoring wells are completed in are of little consequence to the overall conclusions of the FS.

PVSC Attachment A, Comment 21: *Page 1-22, Paragraph 6 - There is an incorrect citation for Table 1-3, it does not contain B7 wellfield data.*

EPA's Response: Comment noted, see response to PVSC Attachment A, Comment 15.

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PVSC Attachment A, Comment 22: *Section 1.4.1.3 - Although this section is largely unchanged from the PVSC FS, the text "Elevated nitrates and TDS have clearly been a widespread, long-observed problem in the Puente Basin. The source of these constituents has never been attributed to industrial facilities" has been removed, and replaced with "... seemingly unrelated to industrial activities in the PVOU...". These changes leave the issue of sources open for interpretation and omit the well-documented historic context for nitrates and TDS. The original statement should not have been removed, as the public could erroneously conclude that the industrial facilities that contributed VOCs are also responsible for elevated nitrate and TDS concentrations.*

EPA's Response: This sentence was reworded to more accurately reflect EPA's level of knowledge regarding sources of nitrate and TDS contamination in the PVOU. The new sentence does not imply that industrial activities are known to be a source of nitrate and TDS contamination.

PVSC Attachment A, Comment 23: *Section 1.4.2.1 - The second of two bullets in the middle of page 1-32 inappropriately deletes the discussion of the four "fates" of VOCs in ground water that are included in the PVSC's bullet. EPA also deleted the discussion on the likelihood that facility-specific actions, continued pumping of the B7 wellfield, and natural attenuation may meet the remedial objectives for the PVOU. This discussion should not be deleted as this scenario is supported by ground water quality data and contaminant transport analysis.*

EPA's Response: EPA deleted the referenced text because there was insufficient data for EPA to conclude that these potential fates limit the need for an additional regional remedy.

PVSC Attachment A, Comment 24: *Section 1.4.3.1 - The last sentence of the second paragraph of the PVSC's text, which described existing data and modelling as supporting natural attenuation, has been deleted. The third paragraph is the same as the PVSC's, but doesn't utilize 1995 data for B7C and B11B which are cited on page 1-22. In the fourth paragraph, EPA raises the specter of the B7 wellfield wells drawing contamination deeper and adds the three bullets at the top of page 1-34 that cite negative consequences of "continuing to permit the VOC contamination to migrate to these production wells". EPA says "continuing to permit... will have the following effects:", but then for each effect, EPA says it may. There is no evaluation of actual data, which do not support the likelihood of any of these effects. Furthermore, EPA's text does not caveat the conclusion that any pumping-induced vertical migration would (a) be localized, and (b) pumped right back out of the aquifer by the wells.*

EPA's Response: EPA believes that the continued migration of VOCs into production wells would have the effects listed in Section 1.4.3.1 of the FS because of the continued need to treat large volumes of ground water. EPA agrees that contamination pulled into deeper zones by the B7 wells could be captured as long as those wells operate at sufficient capacities.

PVSC Attachment A, Comment 25: *There is no justification for the language in the first bullet*

on page 1-34 that states that response costs may greatly increase if contamination is allowed to continue to migrate to the B7 wellfield. EPA's speculation appears to be based on an oversimplistic analysis. Water quality data and contaminant transport analysis support the likelihood that B7 wellhead treatment costs will not increase without supplemental pump and treat remedial action. These supporting data and analysis include the observation that VOCs have not been detected in the deep aquifer in the vicinity of the B7 wellfield; over the past decade, VOC concentrations in the B7 wellfield have mostly remained steady or exhibited a decreasing trend; and, contaminant transport modelling indicates that B7 wellhead treatment costs will not increase without supplemental pump and treat.

EPA's Response: See EPA response to PVSC Attachment A Comments 14 and 24.

PVSC Attachment A, Comment 26: *The third bullet says that allowing continued migration of VOCs to wells B7C and B11B may increase institutional hurdles to implementation of a response action because of the need to negotiate agreements with the owners of the wells. This seems contradictory to statements later in the FS that an agreement with the water purveyors would be an acceptable remedy for intermediate zone control at the mouth of the valley.*

EPA's Response: These two statements should not be read as contradictory. The continued migration of contaminants into the B7C and B11B production wells increases institutional hurdles because the parties implementing the response action would need to reach an agreement with the well owners to use their facilities as part of the response action. EPA is not opposed to the negotiation of an agreement to use these facilities.

PVSC Attachment A, Comment 27: *Section 1.4.3.3 - PVSC's estimate of 0.25 gpm for the discharge across the subdrain has been deleted from the second paragraph. The third paragraph has been modified, with a new last sentence which says "Contaminated groundwater in the subdrain system would likely re-enter the aquifer upgradient of the B7 wellfield." EPA's statement regarding contaminated groundwater in the subdrain re-entering the aquifer upgradient of the B7 wellfield should be qualified (i.e., contaminated groundwater re-entering the aquifer would be captured by any of the regional remedial alternatives in this FS) or deleted. The insignificance of the subdrain in contaminant transport should not be arbitrarily deleted from this discussion.*

EPA's Response: Comment noted. See response to CPC Comment 2.

PVSC Attachment A, Comment 28: *Section 1.4.3.5 - Under Adsorption and Desorption, text was removed that documented low rates of desorption compared with sorption. The second part of the PVSC's paragraph that starts "Contaminants are distributed..." has been deleted. This original paragraph included a discussion of the slow rate of desorption of VOCs from soil and the importance of adsorption to soil in removing VOC mass from the ground water system. Despite the text which still says "...as illustrated in examples detailed below...", the last two paragraphs on page 1-35 of the PVSC's FS that cite PVOU-specific examples and quantification*

of retardation have been removed. This inappropriately weakens the natural attenuation discussion by ignoring the fact that some adsorbed VOC mass is effectively removed from the system. The deleted text supports the contaminant transport modelling conducted for the PVOU and should be re-inserted.

EPA's Response: Through the editing process, several sections of earlier versions of the FS were removed or modified for simplicity, readability, and to focus technical discussions on matters pertinent to the objectives of the FS.

PVSC Attachment A, Comment 29: *Under Decay, the PVSC's conclusion at the end of the first paragraph that "some decay processes are operating in the PVOU" has been deleted. The paragraphs near the bottom of page 1-36 of PVSC's FS that cite examples of anaerobic degradation have also been removed. At the end of the first full paragraph on page 1-38, EPA adds the sentence "As mentioned previously, the relatively limited occurrence of daughter products in the PVOU may be the result of discharges of the constituents at the surface, either directly, or as impurities in other chlorinated VOCs." The examples that EPA removed directly refuted this conclusion. Not only is data nonexistent to make this statement, it was refuted by the removed PVSC-presented examples. It is recognized that in most unconfined and highly permeable aquifers, anaerobic degradation of VOCs is insignificant. However, in the Puente Valley, the aquifers are mostly fine-grained, locally confined, and have a relatively high total organic carbon content. Also, as discussed in PVSC's FS, there are locations where daughter products are present at concentrations higher than would be expected if these compounds were impurities. The relative stability of the ground water plume over the last 11 years, as cited elsewhere in the FS, is another factor consistent with biodegradation of contaminants. Consequently, anaerobic degradation is likely to occur in Puente Valley; and, the data and analysis presented in PVSC's FS should not be deleted.*

EPA's Response: See response to PVSC Attachment A Comment 28.

PVSC Attachment A, Comment 30: The Summary at the end of this section which states that "Several natural attenuation mechanisms are documented as operating in the PVOU" has been deleted. The deletion of discussions regarding natural attenuation appears to be designed to discount the possibility that not only does natural attenuation occur, it may preclude the need for additional pump and treat. These selective deletions are misleading to the public and water community and contrary to EPA's concurrence with the PVSC that natural attenuation is occurring.

EPA's Response: See response to PVSC Attachment A Comment 28. The FS states that observations in the PVOU suggest that natural attenuation is a factor in limiting the migration of VOCs.

PVSC Attachment A, Comment 31: *Section 1.5.1 - The portion of this section beginning with the last paragraph on page 1-39 of PVSC's FS ("A brief overview...") has been deleted. This had*

been the list of remedial activities that had taken place at 32 facilities, based on RWQCB records. Deleting this section ignores the fact that source control actions have lowered concentrations substantially. Such reductions are the basis for not including a continuous source term in the modeling simulations. Facility-specific actions have and will continue to remove more contaminant mass from the system than either of the groundwater pumping alternatives being considered by EPA. These actions, when combined with natural attenuation and pumping from the B7 wellfield, are likely to render additional pump and treat unnecessary to provide adequate containment. Because mass removal by facility-specific actions may play a very important role in affecting the need for additional pump and treat, and because EPA agrees that a subregional "hot spot" control remedy could be effective for shallow groundwater remediation, this discussion should not be deleted. In last paragraph of the remaining text, Ajax should be added as one of the facilities using SVE and/or excavation for source control actions.

EPA's Response: This comment appears to contradict the PVSC's earlier position that Section 1.5.1 was included in the FS as "background information only," and was not intended to support the incorporation of source control actions into remedial alternatives (*Puente Valley Operable Unit Interim RI/FS Comment/Response Summary, Final Feasibility Summary*, Camp Dresser and McKee Inc. (July 1996), p. 12). The deleted text did not include the quantitative information that is necessary for EPA to evaluate the effectiveness of source control actions in containing contaminant migration.

EPA agrees that source control actions in the PVOU remove VOC mass from the shallow zone and therefore may affect the need for additional ground-water extraction. Accordingly, the ROD allows the responsible parties to use source controls actions to help achieve the containment requirements established by the performance criteria.

PVSC Attachment A, Comment 32: Section 1.5.2 - The second sentence has been deleted. This had referred to the effectiveness of governmental controls and use restrictions. All of Section 1.5.2.1 starting with the last line on page 1-42 of PVSC's FS has been deleted. This had described how governmental controls limit or make exposure pathways incomplete. The first paragraph of Section 1.5.2.2 (Judicially Established and Enforceable Use Restrictions) was deleted, which again had discussed the limited exposure pathways that exist because of use restrictions. Additional sentences that were deleted from this section are "Similar controls are available to the Puente Basin Watermaster, although they have been unnecessary since no extracted groundwater from the Puente Basin is used for drinking water" and "Watermaster analyzes the submitted data to develop an overall Basin Water Quality Plan which is submitted to the Regional Water Quality Control Board." Appendix J (Watermaster Rule 28) is not included in EPA's FS.

EPA's FS omits the discussion that appears in PVSC's FS explaining the unique water use controls in the PVOU that limit the potential pathways of exposure. The omission is inconsistent with EPA's Superfund Administrative Reforms, which urge the use of realistic land use scenarios. The FS also omits PVSC's discussion of wellhead treatment and blending practices,

which, consistent with the Safe Drinking Water Act, have protected the public from exposure to contaminants in excess of MCLs.

EPA's Response: EPA deleted the draft text because the description of exposure pathways was misleading (see EPA Response to City Comment IE1), the inclusion of hypothetical institutional controls was not relevant to the discussion of existing exposure control mechanisms, and the salient points from the deleted text are covered elsewhere in the FS. Watermaster Rule 28 is discussed in Section 1.5.2.2.

The final text is consistent with current EPA guidance which advises that EPA use realistic assumptions when considering future land use scenarios. EPA expects that most of the land in and around the PVOU will continue to be used for residential, commercial and industrial uses and these uses will continue to depend on local water supplies. EPA also expects that ground water at the mouth of Puente Valley will continue to be used for domestic purposes and additional drinking water wells may be placed elsewhere within the PVOU in the future.

PVSC Attachment A, Comment 33: *Section 1.6 - This section has been completely re-written. It repeats generalized, pre-RI conclusions of the Baseline Risk Assessment (BRA), but deletes PVSC's application of the findings of the RI to the conclusions of the BRA. The BRA calculated the excess cancer risk from residential exposure to contaminated groundwater in active production wells (even though there are institutional controls to prevent consumption of this water). Since the results were within the acceptable risk range and no valid complete exposure pathway has been identified, no RME has been established at an unacceptable level for any receptor. This section also fails to note that the BRA was broader in scope than the RI/FS and that, accordingly, not all the general conclusions of the BRA are relevant to the FS. The RMEs of the BRA are not applicable to the only medium of concern addressed in the RI, regional groundwater. PVSC's discussions in Section 1.6 of its FS should be re-inserted.*

EPA's Response: The referenced text criticized the Baseline Risk Assessment for using shallow ground water data as the basis for evaluating human health risks and for failing to assume the effectiveness of institutional controls. The draft text incorrectly assumed that the RI/FS was concerned only with regional deep ground water and that institutional controls should have been considered in evaluating exposure pathways. See responses to City Comment IE1 and Goe Comment I.

PVSC Attachment A, Comment 34: *Figures - As noted previously, the vertical scale is not the same on all figures, which could lead to misinterpretation. For instance, Figure 1-24 for well 147W3 indicates a spike in PCE concentrations in the late 1980s/early 1990s that at first glance appears significant but is below drinking water standards (max about 4.5 µg/l) and would be a barely-recognizable blip if graphed on the same scale as some of the other figures.*

Figures 1-10 through 1-15 state "Samples older than 5 years not evaluated", but the figures seem to incorporate old or inaccurate data similar to that used in figures PVSC commented on in the

RI Appendix prepared by EPA.

EPA's Response: Comment noted.

PVSC Attachment A, Comment 35: *Section 2.3.1.1 - The first paragraph on page 2-4, which discusses attaining MCLs and non-zero MCLGs, has been added. This section ignores the natural unsuitability of the PVOU shallow ground water for use as drinking water, due to high nitrates and TDS, and low specific yield.*

EPA's Response: The State of California considers the ground water in the PVOU to be a source of drinking water. It is EPA policy to consider the beneficial use of ground water and to protect against current and future exposures. Ground water is a valuable resource that should be protected and restored if necessary and practicable. Ground water that is not currently used may be a drinking water supply in the future. (55 Fed.Reg. 8732).

EPA recognizes that shallow ground water at the mouth of Puente Valley is not currently used for drinking water, and has therefore established shallow zone containment criteria at ten times the relevant drinking water standards. In addition, the ROD does not establish chemical-specific cleanup standards for restoration of the shallow ground water because the remedy is an interim action to contain contamination.

PVSC Attachment A, Comment 36: *Section 3.1.2 - Although EPA correctly stated the four required elements of a remedial action objective (RAO) in Section 3.1.1, it has erred in identifying them. EPA correctly identifies the first two elements of an RAO for the PVOU -the contaminants of concern are VOCs, particularly PCE and TCE; and the medium of concern is regional groundwater. The final two elements of an RAO are exposure pathway(s) and remediation goal(s). The latter element, remediation goal(s), as stated correctly in Section 3.1.1, must "establish acceptable exposure levels that are protective of human health and the environment."*

EPA's Response: EPA does not agree that it erred in identifying the four required elements of the remedial action objectives (RAOs) for the PVOU. See responses to PVSC Attachment A Comments 37 through 39.

PVSC Attachment A, Comment 37: *Section 3.1.2.3 - EPA identifies domestic use of drinking water as the pathway of exposure. PVSC agrees that this is the relevant potential pathway of exposure. Unlike other areas of the country, though, this pathway cannot be randomly accessed through private residential wells. The pathway is limited to a water supply system maintained by regulated water purveyors.*

EPA's Response: EPA agrees that ground water in the PVOU can be legally accessed only by certain entities holding water rights.

PVSC Attachment A, Comment 38: Section 3.1.2.4 - EPA attempts to identify remediation goals. However, each goal is flawed by its failure either to specify an acceptable exposure level or, because material risk only arises from exposure, to connect a specific acceptable exposure level to an identified, realistic risk specific to this OU. Some goals are further flawed by including elements that do not belong in a remediation goal. The table below analyzes goals:

| No. | Remediation Goal | Specified Acceptable Exposure | Identified Risk | Comment |
|-----|--|-------------------------------|-----------------|--|
| 1. | "Preventing exposure of the public to contaminated groundwater including but not limited to, attaining MCLs for VOCs measured at the point of compliance." | MCLs for VOCs | None | Generalized statement that represents SDWA policy. "[M]easured at the point of compliance" is inappropriate for a remediation goal, which measures concentrations at the point of exposure. |
| 2. | "Inhibiting contaminant migration from more highly contaminated portions of the aquifer to less contaminated areas or depths of the aquifer." | None | None | This is a description of a remedial activity rather than a remediation goal. |
| 3. | "Reducing the impact of continued contaminant migration on down-gradient water supply wells." | None | None | The water supply wells are not themselves a point of exposure to unacceptable risk. |
| 4. | "Protecting future uses of less contaminated and uncontaminated areas and depths of the aquifer." | None | None | This is a policy statement rather than a remediation goal as defined by the NCP. |
| 5. | "Initiating efforts designed to attain MCLs and MCLGs that are relevant and appropriate within the PVOU." | None. | None. | This is not an exposure-specific goal. The determination of whether any MCLs or MCLGs are relevant and appropriate for this site is part of the process of identifying ARARs under NCP §300.400(g). They may be action-specific only, e.g., if extracted groundwater is furnished for domestic consumption. For a permanent remedy, they may be chemical-specific. However, for this interim remedy, they cannot be chemical-specific ARARs applicable in the medium of concern. See §2.3.1.1. |

Remediation goals are defined in the Federal Register as follows: "Remediation goals are a subset of remedial action objectives and consist of medium-specific or operable unit-specific chemical concentrations that are protective of human health and the environment and serve as goals for remedial action." 55 Fed. Reg. 8712-13.

EPA's Response: Remediation goals establish acceptable exposure levels that are protective of human health and the environment. EPA uses health-based ARARs to set remediation goals, when they are available. 40 C.F.R. § 300.430(e)(2)(I). Since this is an interim containment remedy, the FS did not develop remediation goals for ground-water restoration (e.g. MCLs for ground water). The FS instead developed preliminary remediation goals that address potential impacts of contamination on the public and on uncontaminated and less contaminated drinking water.

This comment correctly notes that three of the remediation goals do not specify acceptable exposure levels. Remediation goals 1 and 5 specified MCLs and MCLGs as remediation standards. The determination of final remediation goals is made based on the balancing of the nine evaluation criteria during the remedy selection process. After completing the FS, EPA reconfigured the remediation goals for the proposed plan (specifying MCLs and a potential multiple of MCLs), then identified the final remediation goals for the ROD (MCLs/MCLGs and ten times MCLs/MCLGs). The PVSC provided substantial input into this process. The final remediation goals are the chemical-specific standards used in the ROD's performance criteria.

The NCP does not require that each remediation goal state a connection between a specific exposure level and an identified, realistic risk specific to the PVOU. Read in context, it should be clear that the remediation goals are based on the human health risks posed by the contaminated ground water.

PVSC Attachment A, Comment 39: *In Section 3.1.2.5, EPA identifies RAOs. Since a proper remediation goal is a necessary element of an RAO, EPA's error in Section 3.1.2.4 infects this section with error. EPA's RAOs, furthermore, fail to specify all four elements under NCP §300.430(d)(2). The following table analyzes the RAOs:*

| <i>RAO</i> | <i>Specified Contaminant of Concern</i> | <i>Specified Medium of Concern</i> | <i>Specified Exposure Pathway</i> | <i>Specified Remediation Goal</i> | <i>Comment</i> |
|--|---|------------------------------------|-----------------------------------|-----------------------------------|---|
| <i>"Prevent exposure of the public to contaminated groundwater"</i> | <i>None</i> | <i>Ground-water</i> | <i>None</i> | <i>RG#1</i> | <i>Merely reiterates RG #1, which is itself a deficient RG.</i> |
| <i>"Inhibit contaminant migration from the more highly contaminated portions of the aquifer to the less contaminated areas or depths"*</i> | <i>None</i> | <i>None</i> | <i>None</i> | <i>RG#2</i> | <i>Merely reiterates RG#2, which is itself a deficient RG.</i> |
| <i>"[T]o reduce the impact of continued contaminant migration on downgradient water supply wells."*</i> | <i>None</i> | <i>None</i> | <i>None</i> | <i>RG#3</i> | <i>Merely reiterates RG#3, which is itself a deficient RG.</i> |

| | | | | | |
|--|------|------|------|------|--|
| "[T]o protect future uses of less contaminated and uncontaminated areas."* | None | None | None | RG#4 | Merely reiterates RG#4 which is itself a deficient RG. |
|--|------|------|------|------|--|

[These RAOs are grouped in one bullet point in §3.1.2.5]*

EPA itself has noted that "[r]emedial action objectives include both a contaminant level and an exposure route recognizing that protectiveness may be achieved by reducing exposure as well as reducing contaminant levels." 55 Fed. Reg. 8713.

EPA's Response: Section 3.1.2.1 of the FS identifies VOCs as the contaminants of concern. Section 3.1.2.2 identifies ground water as the medium of concern. Section 3.1.2.3 identifies domestic use of drinking water as the most significant potential exposure pathway. Section 3.1.2.3 identifies the remediation goals, which are discussed in EPA's response to PVSC Attachment A Comment 38, above. The RAOs incorporate each of these elements, they need not restate them.

EPA agrees that in appropriate circumstances, RAOs may be achieved by reducing exposure, as well as contaminant levels. The determination as to whether exposure controls are the best method for meeting RAOs is made during the nine criteria evaluation of remedial alternatives.

PVSC Attachment A, Comment 40: *In Section 3.1.2.5 the FS also mis-characterizes as a "regulatory goal" the NCP's listing of restoration of ground water to beneficial uses as a program expectation. As stated in the NCP, the program expectations are used in developing remedial action objectives. 40 CFR §300.430(a)(1)(iii). But EPA's general expectation to restore ground waters to their beneficial uses does not supersede the requirements of the NCP for the development of proper remediation goals and remedial action objectives. See, National Remedy Review Board advisory letter re Jack's Creek Site, September 6, 1996. "The fact that a proposed remedy may be consistent with the expectations does not constitute sufficient grounds for the selection of that remedial alternative." NCP, Preamble, 55 Fed. Reg. 8702. For this interim RI/FS, this program expectation has, appropriately, not even been used in developing remedial action alternatives, none of which attempt to restore ground water to beneficial uses.*

EPA's Response: This comment refers to EPA's quotation of Section 300.430(a)(1)(iii)(F) of the NCP, which states that EPA expects to "return usable ground waters to their beneficial uses wherever practicable, within a time frame that is reasonable" or if restoration is deemed impracticable, to "prevent further migration of the plume, prevent exposure to the contaminated ground water, and evaluate further risk reduction." The reference to this expectation in Section 3.1.2.5 of the FS helps place the RAOs in context with the general goals, management principles and expectations articulated in the NCP. The preamble to the NCP provides that these expectations "should be considered when making site-specific determinations of the maximum extent to which permanent solutions and treatment can be practicably utilized in a cost-effective manner." 55 Fed. Reg. 8701. EPA has used the quoted expectation as guidance, not as a basis for selecting the remedy.

PVSC Attachment A, Comment 41: *EPA's RAOs are inappropriate. The Statement of Work*

authorized the PVSC to develop RAOs pursuant to the NCP. The preamble to the 1990 NCP provides that "remedial action objectives aimed at protecting human health and the environment should specify: (1) The contaminants of concern, (2) exposure routes and receptors, and (3) an acceptable contaminant level or range of levels for each exposure medium. Remedial action objectives include both a contaminant and an exposure route recognizing that protectiveness may be achieved by reducing exposure as well as reducing contaminant levels." 55 Fed. Reg. 8712-13. EPA has failed to recognize the existing limitations on exposure pathways in the PVOU. EPA's RAOs do not specify accurate exposure pathways.

EPA's Response: See EPA's responses to PVSC Attachment A Comment 39 and City Comment IE1.

PVSC Attachment A, Comment 42: Section 3.1.2.4 - MCLs are applicable "at the tap." MCLs are also often considered relevant for ground water that is a current or potential source of drinking water. However, MCLs are not appropriate for the PVOU for several reasons. First, the regulated medium for MCLs ("piped drinking water") and the affected medium at the site (ground water) are different. Similarly, the place regulated (service connections to a public water system) is much different from the place affected in the PVOU (in-situ ground water). Further, MCLs are not appropriate because much of the impacted ground water in the PVOU is unsuitable for direct drinking water use due to elevated levels of nitrates and TDS. EPA's CERCLA Compliance With Other Laws Manual (OSWER Dir. 9234.1-01, Aug 1988, p.1-5) recognizes that "MCLs are generally not appropriate where ground water is not potentially drinkable due to widespread naturally occurring contamination." Manual at p. 1-69. If MCLs for VOCs were deemed relevant and appropriate for the PVOU, then much of the in-situ water would still exceed acceptable drinking water standards for nitrates and TDS. The Manual also recognizes that "MCLs are generally not appropriate for site-specific circumstances where a well would never be placed and ground water would thus never be consumed." *Id.* Similarly, MCLs are also not appropriate where a regulatory system exists that prevents the extraction and distribution of untreated drinking water. This is precisely the case in the PVOU. The strict access restrictions established by the adjudications and the implementing rules of the Watermaster prevent the unauthorized extraction and use of the ground water.

EPA's Response: MCLs (and non-zero MCLGs) are applicable or relevant and appropriate (ARARs) for ground water that is extracted and used for domestic, municipal, industrial or agricultural purposes or discharged into the environment. Since this is an interim remedial action, EPA has not established final chemical-specific cleanup standards for contaminated in-situ ground water. However, MCLs and non-zero MCLGs are also relevant and appropriate for uncontaminated ground water that is that is located downgradient from the remedial action facilities that are expected to contain contamination in the intermediate zone (See CERCLA Compliance with Other Laws Manual, Part I (Interim Final), OSWER Directive 9234.1-01 (USEPA 1988), p. 1-8).

The concentrations of nitrates and TDS in the ground water do not affect the use of MCLs (and non-zero MCLGs) as cleanup standards for ground water that is extracted and used or discharged by this remedial action. See the response to PVSC Attachment A comment 4.

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EPA does not agree that MCLs and non-zero MCLGs are inappropriate as treatment and containment standards for sources of drinking water simply because state and federal law prohibits the service of contaminated water. This is essentially a circular argument which proposes that it is not necessary to clean up the contaminated ground water under CERCLA because water purveyors, who have the right to use the water but did not cause the contamination, are required to remove the contaminants if they choose to exercise their water rights. The existence of these regulatory controls and their application to production wells in the PVOU, in fact, demonstrates that MCLs and non-zero MCLGs are relevant and appropriate for the contaminated ground water.

PVSC Attachment A, Comment 43: *The text on page 3-3 introduces the concept of aquifer restoration ("EPA's regulatory goal at all contaminated ground water sites...") and mass removal ("The remedial objectives do include "mass removal" as a secondary objective"). This, to the PVSC's knowledge, is the first time EPA has ever mentioned mass removal for this OU. EPA had previously agreed that mass removal was not a goal of the interim remedy.*

EPA's Response: EPA is required to develop interim remedial action alternatives that are consistent with the expected final remedial action (40 C.F.R. § 300.430(a)(1)(ii)(B)). VOC mass removal is identified as a "secondary objective" because containment remedies that accelerate ground water restoration are most consistent with the objectives that EPA expects to evaluate for a final remedial action. Mass removal also satisfies one of the NCP's nine remedial alternative evaluation criteria (reduction of toxicity, mobility or volume through treatment).

PVSC Attachment A, Comment 44: *Section 3.1.3 - Reasons Not to Delay Action - This is a new section added by EPA. EPA states that delaying action would increase the potential for human exposure. Assuming that a delay in action would increase the potential for human exposure assumes that there is current exposure, which is incorrect. There is no real current or future threat to human health from the VOCs in ground water in the PVOU. EPA's assertion is inconsistent with existing restrictions on water use (e.g. the Safe Drinking Water Act and the Watermaster system). In other areas, where unrestricted access to ground water exists, this statement might be more appropriate. The statement also ignores the contaminant transport modelling in Appendix A, which shows no substantial migration of contaminants under a variety of assumptions. If the additional modelling that was omitted is considered, it is apparent that action (i.e., migration control) does not significantly change either the extent or concentration of contaminants in the PVOU as compared with inaction. This statement also fails to consider the non-potability of ground water in the PVOU due to TDS and nitrates, which have deterred its use for other than irrigation.*

EPA's Response: EPA has addressed the issue of exposure pathways and the potability of ground water in its responses to City Comment IE1, Goe Comment I, PVSC Comment 4 and PVSC Attachment A Comments 4, 32 and 42. EPA does not believe that the contaminant transport modelling omitted from the final FS demonstrates that migration is not occurring, especially in light of ground water data which provides more direct evidence of contaminant migration.

PVSC Attachment A, Comment 45: *EPA states that delaying action will increase the burden*

of responding to the contamination on water purveyors. This statement is unsupported by the RI. This statement is contradicted by data, referenced in Section 1.4.2.1 of PVSC's FS but omitted here, that show that wellhead treatment costs will not increase in the absence of an EPA-imposed pump and treat remedy. In any event, the shifting of burdens is not an appropriate consideration when determining whether action ought to be taken under CERCLA. Allocation of burdens should not be confused with threats to human health and the environment. In contrast, after action is determined to be necessary at a site, EPA may appropriately consider imposing the burden of action on responsible parties. In other words, the maxim "let the polluter pay" is not itself a reason for a response, but is a reason for allocating the burden of an otherwise appropriate response.

EPA's Response: The data shows that without containment, VOCs are expected to continue migrating into the B7 Well Field Area. See EPA's response to PVSC Attachment A Comment 44, above. EPA has decided to take action in the PVOU because of contaminant migration, not because water purveyors are currently paying for ground-water treatment.

PVSC Attachment A, Comment 46: *EPA states that delaying action will increase the likelihood for contaminant concentrations to increase in production wells, resulting in the purveyors responding with actions inconsistent with long-term remediation goals. These statements are inconsistent with collected data and analysis, assume San Gabriel Valley Water Company and Suburban Water Systems will not comply with Watermaster Rule 28, and, as such, is misleading to the public and water community. It should also be noted that no long-term remediation goals have been established.*

EPA's Response: See EPA's response to PVSC Attachment A Comment 44. Watermaster Rule 28 provides that water purveyors must obtain Watermaster approval to locate, modify and operate production wells, so that ground water contamination is not exacerbated. Rule 28 does not require that production wells in the San Gabriel Valley be operated to maximize ground-water containment or cleanup objectives. It also does not guarantee that the San Gabriel Valley Water Company and Suburban Water Systems would not abandon some or all of the B7 wells if contaminant concentrations or operating costs increased.

PVSC Attachment A, Comment 47: *EPA states that delaying action will increase the extent of contamination and consequently increase the cost, difficulty, and time required to contain contamination or restore the aquifer. The RI data and the modelling do not support this statement. The wording is objectionable because it assumes continued migration (expansion of the plume), when it has not been demonstrated that this is occurring. Remaining and omitted text in Section 1.4.3.5 demonstrates that the sorbed phase may well act as a mass sink, due to higher adsorption rates compared with desorption rates, which is the opposite of what is stated here by EPA. This statement also assumes that a final RI/FS will lead to a ROD that calls for containment or restoration of the aquifer, which is an unwarranted assumption.*

EPA's Response: Data collected to date indicate that contamination is migrating therefore delaying the action will increase the extent of contamination and consequently increase costs, difficulty, and time required to contain contamination. EPA expects that it will eventually evaluate the need for a final remedial action to restore PVOU ground water. See 40 C.F.R. §

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300.430(1)(a)(iii)(F). Whether or not an action is ultimately taken to achieve ground-water restoration, EPA should evaluate interim actions alternatives for their consistency with anticipated final remedial action objectives. 40 C.F.R. § 300.430(1)(a)(ii).

PVSC Attachment A, Comment 48: *References to Figures 3-1 and 3-2 remain in the text, despite the figures having been removed.*

EPA's Response: Comment noted, the Figures are found in the draft FS prepared by CDM (July 1996).

PVSC Attachment A, Comment 49: *Section 3.4.1 - EPA's FS re-designates as "Institutional Controls" what the PVSC's FS called "Control Mechanisms." The change in nomenclature seems to have affected the substance of the section. PVSC's FS treated "Control Mechanisms" as a broad category of existing as well as potential future processes and activities. PVSC believes that it is consistent with the Superfund Administrative Reforms to identify existing control mechanisms, including both natural processes and institutional ones, as part of performing a realistic appraisal of background conditions. EPA's description of "Institutional Controls" omits existing processes, such as natural attenuation of contaminants. It also omits reference to many existing governmental and societal controls that are part of the background conditions at the site. While such background conditions are not necessarily appropriate for discussion in the FS section dealing with Technologies and Process Options, they must be recognized at some point in the RI/FS process. The FS, like the BRA, for example, implicitly recognizes some social and legal background conditions (e.g., it implicitly assumes that local sanitation ordinances, NPDES and RCRA requirements will be observed), yet assumes that SDWA requirements and Watermaster use restrictions will not be observed. The unexplained use of different assumptions is arbitrary.*

EPA's Response: EPA disagrees. Institutional controls are not "background conditions." EPA has discussed institutional controls and natural attenuation in the appropriate sections of the FS.

PVSC Attachment A, Comment 50: *Section 3.4.3 - EPA deleted PVSC's discussion on practicality of aquifer restoration, particularly in a fine-grained aquifer. Although EPA states that aquifer restoration is an ultimate goal, any attempt to restore the Puente Valley aquifers to pristine conditions would be impractical and fiscally irresponsible. Consequently, PVSC's discussion should be restored so the public is not misled into thinking EPA or any agency will pursue aquifer restoration.*

EPA's Response: The deleted text contained a short discussion about the difficulties of aquifer restoration under circumstances that might be relevant to the PVOU. EPA will consider the practicality of restoring the aquifer when EPA evaluates final remedial action alternatives. There is no basis, and no need at this time, to conclude that aquifer restoration is "impractical or fiscally irresponsible."

PVSC Attachment A, Comment 51: *Table 3-1 (General Response Actions) was edited to substitute Institutional Controls for Governmental Controls and Judicially Established and Enforceable Use Restrictions. Non-CERCLA actions were not included in this. The description*

of the "No Action" alternative does not represent realistic background conditions in the absence of CERCLA action. A realistic description should recognize that established functions of local, state and federal government will continue. Otherwise CERCLA remedial action alternatives must include measures to "CERCLAtize" such basic functions. For example, unless such functions are recognized in the "No Action" description, CERCLA action must include deputizing a police force to protect property used in response actions, must order the maintenance of roads and utilities appurtenant to the response action, must order all inhabitants of the OU to obey local health and safety ordinances (violation of which would be inconsistent with the CERCLA response), and must order state and perhaps even other EPA divisions to enforce NPDES and RCRA requirements. Proper implementation of Superfund Administrative Reforms is impossible unless the "No Action" alternative recognizes realistic background conditions. In the PVOU, such conditions include Watermaster use restrictions on ground water and SDWA requirements.

EPA's Response: See EPA's responses to Goe Comment I and PVSC Attachment A, Comment 4. EPA recognizes the operation of institutional controls, they simply are not "background conditions for the purpose of measuring the effect of remedial alternatives against the No-Action alternative.

PVSC Attachment A, Comment 52: Table 3-2 - This table uses deficient RAOs to perform initial screening of remedial technology, but it may be a harmless error in view of the retained options. However, it improperly attributes responsibility for maintaining existing "institutional controls" to the PVSC. The referenced mechanisms are part of existing background conditions that should be recognized in the "No Action" alternative.

EPA's Response: See EPA's response to PVSC Attachment A Comment 39. EPA agrees that the PVSC cannot control implementation of the institutional controls identified in the FS.

PVSC Attachment A, Comment 53: Section 4.1.1.1.1 - EPA states the RAOs differently than in Section 3. In Section 3 surface waters are deleted, but they are included here.

EPA's Response: Comment noted. EPA did not find that VOCs in PVOU surface waters posed a risk to human health.

PVSC Attachment A, Comment 54: Section 4.1.1.2.1 - This section recognizes the containment of the B7 wellfield, which is inconsistent with other sections of the FS that fail to recognize the containment benefits of these wells, but EPA states that there is no assurance that the B7 wellfield will continue to operate. EPA's assertion that the B7 wellfield may cease to operate is very unlikely given the following: 1) the water quality data over the past decade and contaminant transport analysis do not indicate that VOC concentrations will increase to concentrations that can not be managed with the existing treatment and blending system; 2) the local water demand is not expected to decline; and, 3) Watermaster Rule 28 which precludes relocating a well to a "clean" area.

The current pumping at the B7 wellfield is part of the background conditions in the PVOU. However, the FS does not recognize it as such. Instead, the FS states that "because there is no assurance that the production wells will continue to pump into the future to provide containment

over the life of the CERCLA remedy, this FS does not consider the B7 wells to be a potential component of the CERCLA remedy." The FS states that the current pumping could be used as a part of a remedy if it is assured by the PVSC. There is no basis for the FS to assume that pumping of production wells might not continue for the duration of this interim response. No local planning data or projections of consumption needs are cited to support the assumption.

There is also no basis for insisting on an assumption of responsibility for continued pumping by PRPs as a condition of recognizing such pumping. It is noted that, in the Pollock OU Site Assessment [EPA, April 25, 1994], EPA recognized the planned restart of wellfield pumping by the Los Angeles Department of Water and Power as a satisfactory element of meeting migration control objectives, without insisting on a guarantee, either of the restart or of the continued pumping, under a CERCLA order or otherwise.

EPA's Response: EPA has consistently recognized that operation of the B7 wells could provide containment in the intermediate zone. For the effect of ground water pumping to be considered appropriate as a means of containing contamination, the B7 wells would need to be part of the CERCLA remedy. This option is left open in the ROD. Unless pumping at these wells is incorporated into the CERCLA remedy, it cannot be assumed that this pumping will continue indefinitely.

The statement in the FS that "this FS does not consider the B7 wells to be a potential component of the CERCLA remedy" might be confusing. For the purpose of assembling and evaluating remedial alternatives, EPA assumed that new extraction and treatment facilities would be installed upgradient from the B7 wells. However, the FS, Proposed Plan and ROD all allow for use of the B7 wells in lieu of new facilities, so long as the B7 wells are part of the CERCLA remedy and they are achieving the necessary containment. If continued pumping of the B7 wells is as certain as the PVSC states, it should not be difficult to obtain the assurances necessary to incorporate the wells into the selected remedy.

PVSC Attachment A, Comment 55: *RWQCB-Led Facility Actions are discussed in section 4.1.1.2.2, but only Carrier, Benchmark, and Monadnock are mentioned as pumping ground water. Facilities such as Ajax, Spectrol, Diversey, Lansco, and other facilities which are considering or actually implementing ground water action are not mentioned. The established benefits of soil vapor extraction and air sparging on the ground water are not recognized.*

EPA's Response: Comment noted. See EPA's responses to City Comment ID and CPC Comment 1.

PVSC Attachment A, Comment 56: *Regarding shallow contamination at the Mouth of the Valley (Section 4.1.1.3.1) EPA states "The extent and migration rate of VOCs in shallow ground water downgradient of the mouth of the valley is not well known. Migration velocities and the extent of shallow contamination should be better defined during RD to determine exactly what steps should be taken, if any, to meet RAOs in this area." The data should be collected before a remedy is selected.*

EPA's Response: Some of this information has already been collected and shows that shallow contamination at the mouth of Puente Valley is migrating. Further information will be collected during the remedial design.

PVSC Attachment A, Comment 57: *In the second and third bullets of Section 4.1.1.3.1, EPA asserts that vertical migration of VOC's could occur from one zone to another, due to "downward gradient". These statements regarding downward gradient are repeated throughout Sections 4 and 5, and are used to justify intermediate zone pumping and an extensive/costly monitoring program (e.g. see Section 4.1.2.1). However, appropriate caveats, that all existing data support the hydrostratigraphic factors which greatly minimize the potential for such vertical migration, are absent and should be added.*

EPA's Response: See response to PVSC Attachment A Comment 28.

PVSC Attachment A, Comment 58: *EPA states that insufficient data exist on the effectiveness of natural attenuation. Although the leading edge of the plume has not been characterized, contaminant transport modelling indicates that natural attenuation will be effective in meeting the objectives of the PVOU. This should be discussed in this section of the FS.*

EPA's Response: Data collected to date indicate that contaminant migration is occurring and therefore natural attenuation is not containing ground-water contamination.

PVSC Attachment A, Comment 59: *Sections 4.1.1.3.2 and 4.1.1.3.4- EPA states that contamination may migrate downward from the intermediate aquifer and into the deep aquifer. EPA's statement appears to be based on overly simplistic analysis that looks only at the hydraulic gradient. Water quality data, pumping tests, and contaminant transport modelling indicate that the aquitard below the intermediate aquifer precludes the downward migration of significant quantities of contamination. These sections of the FS should include this interpretation which is based on water quality data and detailed contaminant transport analysis.*

EPA's Response: See response to PVSC Attachment A Comment 28.

PVSC Attachment A, Comment 60: *For intermediate depth extraction at the mouth of the valley, although use of the B7 wellfield is not assumed to be a component of the remedy, it is stated on page 4-5 that "the extraction at the B7 well field itself could be identified as the preferred remedial action [for intermediate zone ground water at mouth of the valley] if continued operation and treatment can be ensured, costs are reasonable, and ongoing monitoring confirms that the well field is effectively meeting RAOs." The PVSC agrees that continued extraction from the B7 wellfield should be the preferred remedial alternative for intermediate zone contamination. There are no production wells and therefore no pathways/receptors upgradient of the B7 wellfield.*

EPA's Response: Comment noted. EPA does not agree that there are no pathways/receptors upgradient of the B7 wellfield.

PVSC Attachment A, Comment 61: *Sections 4.1.1.4 and 4.1.1.5 (Evaluation of Ground water*

Extraction During Remedial Design and Predesign Investigation, respectively) appear to offer some flexibility on pumping locations, rates, and even the need for pump and treat, depending on the results of a pre-RD investigation. This investigation should be performed before a remedy is selected.

EPA's Response: Comment noted. See response to City Comment IA.

PVSC Attachment A, Comment 62: *In the third bullet of Section 4.1.1.5, EPA states that "The down gradient extent of this above-MCL contamination in the deep zone needs to be further evaluated." PVSC is not aware of any legitimate justification to chase VOCs in the 5-10 µg/L range.*

EPA's Response: The deep zone is an existing source of drinking water. VOCs in the 5-10 ug/L range may exceed drinking water standards.

PVSC Attachment A, Comment 63: *Section 4.1.2 - Objectives of the monitoring network include work that should actually be part of further data collections (such as delineating the nature and extent of contamination). This work should be performed prior to selection of a remedy. One of EPA's justifications for additional monitoring wells apparently is related to the fact that B7 wellfield extraction is not considered as part of Alternative 2. If operation of these wells was assured, fewer or possibly even no additional monitoring wells might be required.*

EPA's Response: Extraction from the B7 wellfield is considered as an option in Alternative 2. EPA supports early performance of data collection activities, however, does not agree that it is required in order to select a remedy.

PVSC Attachment A, Comment 64: *Section 4.1.2.1 - EPA proposes to install additional mid-valley monitoring wells in the intermediate and deep aquifers. Water quality data and contaminant transport analysis indicate that existing monitoring wells in the mid-valley area are adequate to monitor the intermediate and deep aquifer in that area, particularly since water quality data and contaminant transport modelling indicate that significant migration of contaminants from the intermediate aquifer to the deep aquifer is not expected to occur. Even if mid-valley pumping from the intermediate aquifer is implemented, the existing network of monitoring wells is expected to adequately monitor up- and downgradient conditions.*

EPA's Response: EPA does not agree that existing mid-valley monitoring wells are sufficient.

PVSC Attachment A, Comment 65: *In Section 4.1.3, EPA asserts that "there are several water purveyors in Puente Valley that may be interested in accepting treated water". This statement appears to be without substantiation.*

EPA's Response: At the public meeting for EPA's Proposed Plan several water purveyors stated their interest in accepting treated water (see transcript of public meeting).

PVSC Attachment A, Comment 66: *Also without substantiation is the statement that the RWQCB will issue a waiver for discharge of water with elevated TDS and nitrates. EPA should*

also discuss the water rights issues that would have to be resolved for water to be discharged to Puente Creek and ultimately leave the Main San Gabriel Basin. Costing of any alternatives involving discharge of water to San Jose Creek should include water replenishment costs. Also, EPA should discuss what would be required to resolve water rights issues, and the likelihood of the RWQCB issuing a waiver for discharge to San Jose Creek. Whether EPA would oppose or override a waiver should also be disclosed. Costing should have been done assuming no waiver.

EPA's Response: See EPA's responses to City Comments IC and IF. The FS estimated the costs of nitrate and TDS treatment for the remedial alternatives. EPA addressed the water rights issues in Sections 4.1.3 and 5.6.1 of the FS and Section 9.6.1 of the ROD.

PVSC Attachment A, Comment 67: Section 4.1.5.4 - EPA states that "... current data suggest that active ground water control in the mid-valley intermediate zone is likely needed...". To the contrary, current water quality data and the contaminant transport modelling suggests that ground water control in the mid-valley intermediate zone is not needed. As discussed above, for the past decade, water quality data for the B7 wellfield indicates that VOC concentrations in the intermediate aquifer are stable or are declining. Also, VOCs are not detected in the deep aquifer that provides water to the B7 wells. The regional aquitard below the intermediate aquifer appears to limit the downward migration of significant quantities of VOCs. This is confirmed with contaminant transport modelling. EPA's assertion is mostly based on an over-simplistic interpretation that if there is a downward vertical gradient, significant vertical contaminant migration will occur. EPA's interpretation should be based on the most likely occurrence of contaminant migration, considering all available data and analyses, not an overly conservative interpretation of selected data and simplified analysis.

EPA's Response: Active ground-water control in the mid-valley is an element of Alternative 4, which was not chosen as the preferred alternative.

PVSC Attachment A, Comment 68: EPA's description of No Action (Section 4.2.1) is confusing. It does not consider LARWQCB-led actions, but "Ground water extraction at water supply wells is considered as part of background conditions in the PVOU area...". So, it would appear that pumping of the B7 wellfield is part of No Action, but it cannot be depended upon to be part of an active remedy without being CERCLAized. This should be clarified.

It is inconsistent to consider on-going extraction at the production wells without treatment of the extracted ground water as part of the "no action" alternative. The "no action" alternative should recognize the existing situation in the PVOU - absent any intervention by EPA - including production well pumping and wellhead treatment required by state and local agencies. The inclusion of existing treatment and monitoring in the "no action" alternative is consistent with the NCP, which recognizes that the "no action" alternative is "often a 'no further action' alternative" because of existing action at the site. See, 53 Fed Reg. 51394. "The no-action alternative involves leaving the site essentially as it is." This is also consistent with EPA's approach to site characterization, which is performed at the beginning of the RI. The essential purpose of site characterization is to develop an understanding of the existing features of the site, including the extent to which ground water is used, or is reasonably expected to be used, as a drinking water source. Guidance for Conducting Remedial Investigations and Feasibility

Studies Under CERCLA at 3-7, 3-10 (EPA, Oct. 1988).

EPA's Response: As explained in the FS, regional ground water pumping is considered in hydraulic evaluations of ground-water flow because it is an essential and dominant factor affecting the direction and velocity of ground-water movement. As EPA has discussed in its responses to PVSC Comment 1 and PVSC Attachment A Comment 54, the continued operation of these wells in a manner that contains contamination is not assured by CERCLA, by this ROD, or by the parties responsible for implementing the remedy.

Ground-water treatment is not assumed in the No-Action alternative. EPA recognizes that prior cleanup actions may be part of the baseline conditions that are used for evaluating the No-Action alternative during subsequent response actions. No-Action alternatives do not include institutional controls and generally do not assume that voluntary activities by others will necessarily occur in the future.

PVSC Attachment A, Comment 69: *Alternative 2 (Ground water Monitoring) "does not have any extraction, treatment, conveyance, or discharge components." This would appear to exclude B7 pumping. It is unreasonable to exclude operation of the B7 wellfield. Whether or not an agreement is negotiated between the PVSC and the water purveyors, the B7 wellfield will continue to operate.*

EPA's Response: See response to PVSC Attachment A Comment 54.

PVSC Attachment A, Comment 70: *Table 4-1, a new table showing information on B7 wellfield wells, contains numerous typographical errors. For example, ground elevation is shown a "0" for two of the wells, the depths for three wells are incorrect, and the completion date for five of the wells is shown as "1-Jan-01".*

EPA's Response: Comment noted.

PVSC Attachment A, Comment 71: *Tables 4-2 through 4-5 are new or substantially revised tables showing new monitoring wells, existing monitoring wells, components of alternatives, and extraction information on alternatives, respectively. As noted previously, PVSC believes that EPA's proposed monitoring requirements are excessive. There is no explanation of footnote A on Table 4-5, although there is some discussion regarding this (intermediate zone extraction at Mid-Valley) in the text (page 4-13).*

EPA's Response: Comment noted.

PVSC Attachment A, Comment 72: *In the first paragraph of Section 5.1.1, EPA make several statements when describing the "limitations of Alternatives 1 and 2" which are, at best, unsubstantiated. These include alleged increased potential for human exposure; increased costs for VOC treatment; future increases in VOC concentrations (EPA has evidently concluded that natural attenuation is not occurring and therefore continued plume migration is occurring, without any data to document this), and increased "time required for... restoration of the aquifer". Aquifer restoration in a site such as the PVOU is generally considered to be techni-*

cally infeasible. These unfounded statements are part of the basis for EPA's evaluation of the alternatives and yet they are not based on nor supported by the data generated at great expense and over long periods in the EPA-sanctioned RI report. This section also fails to take into consideration relevant existing controls which effectively eliminate exposure pathways. Alternatives 1 and 2 (if defined properly) meet federal drinking water standards because of treatment or other actions required to achieve compliance at the tap. An unstated advantage of Alternatives 1 and 2 is avoidance of the expense of a potentially unnecessary treatment alternative.

EPA's Response: EPA disagrees. The inability of Alternatives 1 and 2 to control contaminant migration is well-documented by the RI/FS and the ROD. EPA did not conclude that natural attenuation is not occurring. Section 1.4.3.5 of the FS states: "Observations in the PVOU . . . suggest that natural attenuation is a factor in limiting the migration of VOCs, both within and out of the mouth of the Puente Valley toward the Main San Gabriel Basin." EPA cannot assume that aquifer restoration is infeasible. See EPA's response to PVSC Attachment A Comment 50. EPA has addressed the issue of institutional controls and exposure pathways in its responses to City Comment IE1, Goe Comment I and PVSC Comments 6 and 13. Compliance with Safe Drinking Water Act regulations is not a CERCLA remedial action.

PVSC Attachment A, Comment 73: *When Alternative 1 is properly characterized, it is apparent that all four alternatives are equally protective of human health and the environment. The migration control alternatives (3 and 4) do not add protection, because they do not interdict existing or probable future pathways for the transmission of an unacceptable level of risk to any sensitive receptors. Furthermore, if one assumes that the FS's "No Action" scenario is valid, Alternatives 3 and 4 are not protective of human health, because they do not prevent access to untreated ground water at random points within the PVOU for domestic consumption. Alternatives 3 and 4 must re-invent the Watermaster system and the SDWA as elements of CERCLA action in order to achieve such protection.*

EPA's Response: Unlike the No-Action alternative, Alternatives 3 and 4 control contaminant migration in the ground water and at the pathway of exposure through production wells in the mouth of Puente Valley. EPA agrees that Alternatives 3 and 4 are not absolutely protective of human health because contaminated ground water will remain in place upgradient from the mouth of Puente Valley. The ROD therefore provides that EPA will reassess the selected remedy every five years. In addition, EPA will evaluate final remedial actions to restore ground-water quality.

PVSC Attachment A, Comment 74: *Section 5.1.2 - EPA states that "Alternatives 1 and 2 ... fail to provide migration control." This is not true if migration control is occurring due to natural attenuation, as contaminant transport modelling suggests. Therefore, it is premature to make this statement. The unwarranted assumption of continued vertical and lateral migration is pervasive in Section 5. Even assuming that migration control is a valid objective and that there are actual receptors at risk, placing migration control at mid-valley in the PVOU (as per Alternative 4) would not protect receptors either upgradient or downgradient, because of the multiple, facility-specific sources in the valley. Similarly, migration control at the mouth of the valley (Alternative 3) does not protect anything within the PVOU and would at best be a*

redundant measure in view of the wellhead treatment and blending that is occurring at the B7 wellfield. Modelling shows that natural attenuation is likely to meet the containment objectives.

EPA's Response: Data collected to date indicate that ground-water contamination is migrating and therefore natural attenuation is not meeting the containment objectives.

PVSC Attachment A, Comment 75: *Although the FS states that increasing VOC concentrations are expected at production wells, this is unsupported. Water quality data and contaminant transport modelling suggest that concentrations in production wells will not increase, and natural attenuation will preclude wells downgradient of the B7 wellfield from becoming impacted.*

EPA's Response: Modelling is a simplification of actual processes and must be interpreted with respect to the assumptions made during the modelling effort. Data collected to date indicate that ground-water contamination is migrating.

PVSC Attachment A, Comment 76: *When describing Alternative 4 on page 5-2, it is stated that this alternative will "remove additional contaminant mass". Mass removal is not previously identified as an RAO and, in fact, is so noted by EPA on p. 5-10. When evaluating cost, a cost per pound of mass removed is calculated and it is stated "Although mass removal is not identified as one of the RAOs for the Puente Valley FS, it is one of the nine evaluation criteria (i.e., reduction in toxicity, mobility, or volume through treatment) and is useful in a cost benefit analysis of alternatives". For this interim FS, mass removal or restoration of the aquifer to MCLs is not an appropriate consideration. In any event, restoring the Puente Valley aquifer(s) would be technically impractical and fiscally irresponsible, especially in light of the non-CERCLA contaminants that render its water non-potable.*

EPA's Response: Mass removal is an appropriate consideration under the NCP's nine criteria evaluation process. See 40 C.F.R. § 300.430(e)(9)(iii)(D). The PVSC has not demonstrated that restoration of the PVOU ground water is "technically impractical and fiscally irresponsible."

PVSC Attachment A, Comment 77: *Section 5.2.1- EPA states that neither Alternatives 1 nor 2 ensure that water produced from the B7 wells will be treated to reduce contaminant levels to below MCLs. It is wholly inappropriate to develop and evaluate a monitoring alternative which violates federal and California law (SDWA, Title 22, etc.). Such a scenario precludes legitimate evaluation of the alternative under the NCP. This section also ignores the text in Section 2 which states that since this is an interim remedy there are no ARARs. Alternatives 1 and 2 would comply with ARARs - the FS just artificially ignores the ongoing treatment and other actions which ensure attainment of drinking water standards at the tap. Contrary to the FS, each alternative satisfies any ARARs that might pertain to it. Alternatives 1 and 2, by definition, do not have chemical-specific or action-specific ARARs (other than action-specific ARARs related to monitoring under Alternative 2). Furthermore, since this is an interim FS, attainment of MCLs or MCLGs is not an objective, as recognized in Section 2.3.1.1, and for the same reason SWRCB Resolution 92-49 should not be considered. In any event, no alternative seeks to clean up ground water to any particular level.*

EPA's statement that "Additional restoration of regionally contaminated areas is not consistent with the RAOs ..." is correct. In fact, any restoration is not consistent with the RAOs.

EPA's Response: Alternatives 1 and 2 do not violate state and federal law. Again, as EPA discussed at length with the PVSC throughout the RI/FS process, the state and federal Safe Drinking Water Acts and Watermaster regulations are institutional controls that may prevent exposure to contaminants, but they are not baseline conditions that EPA should assume under the No-Action scenario. ("Institutional controls, while not actively cleaning up the contamination at the site can control exposure and, therefore, are considered to be limited action alternatives," 55 Fed.Reg. 8710; see also, 40 C.F.R. § 300.430(a)(1)(iii)(D)). It is not that the alternatives violate the law, rather, they do not control the ground-water contamination. See EPA's response to PVSC Comment 13.

The FS does not state that there are no ARARs. It states that since this is an interim remedy, drinking water standards will not be ARARs for aquifer restoration.

PVSC Attachment A, Comment 78: *Section 5.3 - The FS uses deficient RAOs to evaluate long-term effectiveness. Since migration control is erroneously stated as an RAO, it follows that any alternative that is not a form of migration control will not satisfy this criterion. All alternatives are essentially equal in long-term effectiveness when all data are considered and proper RAOs are used.*

EPA's Response: EPA addressed the RAOs issue in its response to PVSC Attachment A, Comment 39. Actions that control contaminant migration are more effective at reducing risk over the long-term than actions that allow for continued migration of contaminants into uncontaminated ground water and production wells.

PVSC Attachment A, Comment 79: *Section 5.3, first paragraph - The in-situ ground water should not be considered a "waste".*

EPA's Response: The contaminants in the ground water are untreated waste.

PVSC Attachment A, Comment 80: *In the second paragraph of Section 5.3.1, EPA states that "particle tracking results suggest Alternatives 1 and 2 do not contain contaminant migration...". This statement is misleading, given that the particle tracking methodology, by definition, does not include the hydrochemical processes that would provide contaminant migration control. This misapplication of particle tracking is used as the basis for rating Alternatives 1 and 2 as "low" in Section 5.3.2. The contaminant transport modelling and the water quality data both show that there is no significant migration of contamination from the shallow aquifer into the intermediate aquifer, nor is there significant migration of contamination from the intermediate aquifer to the deep producing aquifer. A hydraulic gradient by itself is no basis to conclude that there is significant contaminant transport through an aquitard.*

EPA's Response: Particle tracking assumes purely advective flow. Comment noted.

PVSC Attachment A, Comment 81: *Section 5.4.1 - When the No Action alternative is properly*

characterized, it is apparent that existing background conditions are reducing the toxicity, mobility, and volume of contaminants. Without additional contamination being added to the system, natural attenuation will reduce the mobility and volume of contamination. Furthermore, facility-specific actions, volatilization of VOCs in ground water that discharges to San Jose Creek, and pumping of the B7 wellfield are removing contamination from the system. Again, EPA's evaluation of alternatives in the FS is contrary to the results of contaminant transport modelling and reasonable interpretation of water quality data.

EPA's Response: See responses to CPC Comment 1, Goe Comments I and II, and PVSC Attachment A Comments 4, 31, and 72.

PVSC Attachment A, Comment 82: *The analysis which compares mass removal in Alternatives 1 and 2 versus that achieved in Alternatives 3 and 4 is incorrect. EPA calculates the mass removal by remedial extraction wells assuming 1995 VOC concentrations remain constant for 30 years. These mass removal calculations overestimate the mass removal by not accounting for the likelihood that VOC concentrations would likely decrease over the next 30 years, especially given the relatively efficient mass removal attained by facility-specific actions. Any attempt to perform a mass removal/cost benefit analysis should appropriately consider and include source control actions. A review of partitioning coefficients for VOCs demonstrates that over 90% of the VOC mass is in the vadose zone, and that removal of mass from this zone is both more technically feasible and cost effective than removal of VOC mass from ground water. At least one industrial facility in the PVOU has already removed more VOC mass with an SVE system than has been estimated for either Alternative 3 or Alternative 4. Since adsorption is occurring and is known to permanently remove mass from ground water systems, then a reduction in mobility and toxicity is occurring with Alternatives 1 and 2.*

The criterion of reduction of toxicity, mobility, or volume can only be properly used to compare alternatives in light of the impact of such reduction (or lack thereof) on the achievement of RAOs. The deficient RAOs of the FS preclude proper weighing of this criterion.

EPA's Response: The mass removal calculations are included only for comparative purposes, and are not intended to document absolute removal quantities. The FS notes and supports facility-specific remediation of contamination in both the unsaturated and shallow saturated zones.

PVSC Attachment A, Comment 83: *Section 5.5.2 - All alternatives are essentially equal in short-term effectiveness. It is illogical to rank Alternative 1 low in this criterion because it has no active element. If all alternatives are ranked for short-term effectiveness in light of achievement of proper RAOs, then all alternatives are also equal.*

EPA's Response: In the ROD, Alternative 1 is not evaluated against the short-term effectiveness criterion. Because the alternatives are not the same, it is illogical that all alternatives should receive the same ranking with respect to this evaluation criterion.

PVSC Attachment A, Comment 84: *Section 5.6.1 - Alternative 1 is properly not ranked for the criterion of implementability. Alternative 2 is properly ranked higher than alternatives 3 and 4.*

This section also deals with implementability issues surrounding water rights and discharge options. The analysis should have conservatively recognized that these may be significant impediments, rather than the EPA assumption that the issues can be resolved.

EPA's Response: In conversations with the Watermaster, the issues surrounding water rights have been resolved. The PVSC, RWQCB and EPA identified a process for addressing the issues surrounding discharge options. On September 14, 1998, the RWQCB approved a resolution approving EPA's Proposed Plan thereby resolving issues surrounding discharge of treated ground water.

PVSC Attachment A, Comment 85: *Section 5.7 - Given the substantial equality of all alternatives on other criteria, when properly applied, it is apparent that Alternative 1 is the most cost-effective alternative for this interim FS.*

EPA's Response: Alternative 1 is the most inexpensive alternative; it is not the most cost-effective because it does not meet EPA's remedial action alternatives, protect human health and the environment, comply with ARARs, or represent the best balance of the other CERCLA evaluation criteria.

PVSC Attachment A, Comment 86: *Section 5.7.2 - The analysis considers mass removal to be one of the nine CERCLA evaluation criteria, equating it with reduction in "toxicity, mobility or volume". This analysis ignores natural attenuation as a mechanism to reduce toxicity and mobility.*

EPA's Response: EPA recognizes that natural attenuation may limit the migration of VOCs and states so in the FS. Not enough information has been collected to demonstrate significant reduction of toxicity and mobility as a result of natural attenuation processes.

PVSC Attachment A, Comment 87: *Table 5-2 shows mass removed over 30 years. EPA's estimations appear to be assuming the upper end of the range of existing concentration values for each area, and also assuming that concentrations will remain constant for 30 years. Neither assumption is valid.*

EPA's Response: See response to PVSC Attachment A Comment 82.

PVSC Attachment A, Comment 88: *In Table 5-6 when alternative costs are compared, it is assumed that water is discharged to San Jose Creek with VOC treatment only, so costs for treatment of nitrate and TDS are omitted. The present worth and \$/lb removed are almost double if RO treatment is needed. Cost comparisons should not assume that treatment for TDS and nitrates will not be required, in view of the statement in Section 4.2.3.3 that such treatment "would probably be required." While PVSC does not necessarily concur that such treatment should be required, this statement in the FS requires a corresponding cost estimate in Section 5. If alternatives involving the discharge of water to San Jose Creek are costed, the costs should include replenishment costs due to the water not being used beneficially within the San Gabriel Basin. Lastly, the comparison of Alternatives 3 and 4 in Table 5-7 is misleading, as it does not compare the mass removal values to the total mass in the subsurface.*

EPA's Response: See EPA's responses to City Comments IC and IF.

Appendix A

PVSC Attachment A, Comment 89: *The references to Well MW6-65 in the last paragraph on page A2-7 are apparently in error. EPA must be referring to Well MW6-55.*

EPA's Response: Comment noted.

PVSC Attachment A, Comment 90: *There are significant differences in both Sections 5 and 6 of Appendix A of the EPA FS from those in the original FS, as discussed below.*

EPA's Response: Comment noted.

PVSC Attachment A, Comment 91: *Section A.5 - The original Section A.5 included a full discussion of the Particle Tracking simulations including an assessment of how the results were in agreement with field observations, and how the model's results supported the conceptual model, and the postulated contaminant migration pathways. The text addressed how the model's behavior and results were consistent with the observed distribution of heads and contaminant at the various screens at MW6-2, 6-3, 6-4 and 6-5. The original text also provided justification for the results and an assessment of how contaminants might continue to migrate in the shallow, intermediate (663) and deep aquifer zones in the future.*

None of these interpretations of the model's results are included in the EPA version of Appendix A.5. The revised text is titled "Particle Tracking Sensitivity Analysis" but it only compares the results from the steady state and transient simulations - it does not present any real "sensitivity" analysis as the term is normally used. Comparing particle (plume) capture from 12-year transient simulations to 100-year containment under steady state conditions does little for the typical reader, and is no use in the assessment of selected alternatives. The model as originally applied provided far more insight into plume migration in the Puente Valley OU.

PVSC's Section A.5 provided a much more cogent assessment of how the overall Puente Valley hydrogeological system worked, and how the observed distribution of contaminant could be explained. It made clear what the primary migratory pathways were, and how future plume movement might occur, or be controlled. It provided the basis on which a logical future decision could be based. PVSC is concerned that the absence of most of the text assessing the plume migration characteristics restricts key information from other agencies and the public reviewing the FS.

EPA's Response: EPA disagrees. PVSC's text and other related documents are available to other agencies and the public in the Administrative Record

PVSC Attachment A, Comment 92: *Section A.6 - EPA's FS omits much of the PVSC FS's Section A.6 (Contaminant Transport Modelling), and replaces it with particle tracking presented in Appendix B. The contaminant transport modelling conducted by the PVSC, which has been accepted by EPA and is included in part of this FS, is much more accurate in predicting*

contaminant fate and transport than the overly simplistic particle tracking used by EPA. The use of particle tracking by EPA, although useful for estimating ground water flow and well capture, can significantly overstate contaminant migration. A comparison of EPA's particle tracking results to current water quality data and the results of PVSC's contaminant transport modelling indicates that EPA has substantially overestimated the threat of uncontrolled contaminant transport in Puente Valley (i.e., both at mid-valley and at the mouth of the valley). The 100-year time horizon used for EPA's particle tracking analysis is extreme and unwarranted for this interim FS.

EPA's Response: As explained in the FS, simulation of contaminant transport requires numerous assumptions on a wide variety of variable for which there are few data if any data available. Contaminant transport simulations are also highly dependent on the geometry of the numerical model, which is a significant simplification of the natural system. As shown in the sensitivity analysis, even minor changes in assumed parameters greatly affects the results of the contaminant transport simulations. Particle tracking is more simplistic. The FS uses particle tracking analyses simply as a method of comparing alternatives and demonstrating well capture. No implication is made regarding the actual effects of contaminant migration.

PVSC Attachment A, Comment 93: *This section has been reduced in scope to only address the two Alternatives considered by EPA. The reduction in number of Alternatives is consistent with EPA's different approach to Alternatives considered, but it does remove all the insight gained from considering other alternatives. Deleting all evaluations of these other alternatives significantly reduces the knowledge gained from the simulation studies.*

EPA's Response: EPA considered the information in this section in preparing the Final FS. This information is contained in the Draft FS which is part of the Administrative Record.

PVSC Attachment A, Comment 94: *As in Section A.5, the section dealing with migratory pathways and summary of how the modelling results are consistent with field observations has been deleted.*

EPA's Response: See prior response.

PVSC Attachment A, Comment 95: *The discussion of mass removal which could be attained by alternatives has also been deleted. There are tables reflecting the initial mass in the system, and the mass added during the 30-year simulation period. There are no tables, however, indicating mass removed from the system (even by facility-specific pumping such as BDP/Carrier, or discharging to San Jose Creek) during that period of time. The deletion of these two important conclusions from the section substantially weakens the technical content of the section.*

EPA's Response: See response to PVSC Attachment A Comment 93.

PVSC Attachment A, Comment 96: *Most of the technical insight gained during the PVSC's modelling studies and presented in the original Appendix A.6 has been inappropriately deleted from the EPA version.*

EPA's Response: See response to PVSC Attachment A Comment 93.

PVSC Attachment A, Comment 97: *Other specific examples of text changes include Section A.6.5, second paragraph, where PVSC had originally indicated that ... "these aquifer zones are minimally aerobic and not conducive to anaerobic dechlorination...". The revised text deletes the minimally, and implies that the aquifers are aerobic. This is misleading.*

EPA's Response: See EPA response to PVSC Attachment A Comment 28.

PVSC Attachment A, Comment 98: *Later in Section A.5.6, the original PVSC text included a discussion on how the selected retardation factors were consistent with field observations of plume migration times. All of this text supporting the selected parameters has been deleted from EPA's document, and weakens the technical basis for the transport simulations.*

EPA's Response: See EPA response to PVSC Attachment A Comment 93.

PVSC Attachment A, Comment 99: *In PVSC's Section A.6.7.1 PCE Migration, a bullet discussion addressed the downgradient impact of a DNAPL source in the vicinity of MW6-4/6-5. This bullet was inappropriately deleted in total in the EPA document.*

EPA's Response: See EPA response to PVSC Attachment A Comment 28.

Appendix B

PVSC Attachment A, Comment 100: *Regarding Figures B-20 and B-21 referenced in Section B.3.2 for the simulation of Alternative 2, these figures suggest that the B7 wellfield is operational. Previous descriptions of Alternative 2 appear to exclude B7 wellfield pumping.*

EPA's Response: Alternative 2 does include the B7 wellfield pumping.

PVSC Attachment A, Comment 101: *Figures B-28, B-29, and B-30 incorrectly refer to Alternative 6 rather than Alternative 4.*

EPA's Response: EPA agrees.



Appendix B to Consent Decree

United States v. Carrier Corp. (C.D. Cal.)

SCANNED

ESD

**EXPLANATION OF SIGNIFICANT DIFFERENCES
TO THE 1998 INTERIM RECORD OF DECISION
PUENTE VALLEY OPERABLE UNIT
SAN GABRIEL VALLEY SUPERFUND SITES, AREA 4**

DRAFT

Introduction and Purpose

The United States Environmental Protection Agency (EPA) is updating the Superfund cleanup plan for the Puente Valley Operable Unit ("Puente Valley OU") of the San Gabriel Valley (Figure 1) in Los Angeles County, California in response to the recent detection of two new pollutants in the groundwater underlying the area. The EPA adopted the original Puente Valley OU cleanup plan in 1998 after extensive public comment. The original cleanup plan is outlined in the 1998 Interim Record of Decision (Interim ROD). The 1998 cleanup plan calls for containing the VOC-contaminated groundwater in the shallow and intermediate groundwater zones at the mouth of the Puente Valley and treating it to remove the contaminants. The goals of the 1998 cleanup plan are to prevent exposure of the public to groundwater contaminated with volatile organic compounds or VOCs, including tetrachloroethylene (PCE), trichloroethylene (TCE), and other chlorinated solvents. This Explanation of Significant Difference (ESD) updates the Superfund cleanup plan to address the two newly detected contaminants, which include:

- 1,4-dioxane, a stabilizer in chlorinated solvents; and
- perchlorate, used in solid rocket fuel and other applications.

These two contaminants will need to meet all on-site and off-site requirements, as applicable. The chemicals of potential concern requiring containment are listed in Table 2 of Attachment 1 of this ESD. Since 1,4-dioxane is believed to be co-located with the VOCs, providing lateral and vertical containment for VOCs should also provide lateral and vertical containment for 1,4-dioxane, as required by the Performance Criteria. However, should the 1,4-dioxane need further lateral or vertical containment then additional action would be required.

The detection of 1,4-dioxane and perchlorate will change the cleanup project in the Puente Valley OU significantly. That is, the technologies that are typically used to remove chlorinated solvents from water (air stripping and carbon adsorption) do not effectively remove 1,4-dioxane or perchlorate. Therefore, where containment and treatment of 1,4-dioxane is necessary, different treatment technologies would need to be implemented. Likewise, should the treatment of perchlorate be necessary, a technology appropriate for perchlorate treatment would be needed. The installation of additional treatment facilities to treat 1,4-dioxane, and if necessary perchlorate, in the groundwater significantly increase the cost of the cleanup, as described below. Final decisions on treatment processes will be made during the remedial design and remedial action.

Additionally, the criteria by which performance of the remedy is measured ("Performance Criteria") have been modified. That is, if the Performance Criteria are exceeded or it is more likely than not that the Performance Criteria are going to be exceeded at any time during the Remedial Action, a reasonable amount of time will be allowed to take the necessary actions to

bring the system back into compliance. The modified Performance Criteria are set forth in detail in Attachment 1 of this ESD.

When significant, but not fundamental changes are needed in a Superfund cleanup plan, the EPA informs the community through an Explanation of Significant Differences (ESD). EPA has determined that an ESD is appropriate because the interim remedy remains as outlined in the Interim ROD: to contain contaminated groundwater in the shallow and intermediate zones at the mouth of the Puente Valley and to treat it to remove the contaminants. This ESD does not finalize the interim remedy.

The lead agency for the Puente Valley OU cleanup is EPA and the support agency is the California Department of Toxic Substances Control.

EPA is issuing this Explanation of Significant Differences to satisfy its public participation responsibilities under CERCLA Section 117(c) and NCP Section 300.435(c)(2)(i).

This ESD will become part of the Administrative Record file for the Puente Valley OU pursuant to NCP Section 300.825(a)(2) and will be available to the public at the following locations:

EPA Region 9 Superfund Records Center
75 Hawthorne Street
San Francisco, CA 94105 • (415) 536-2000

The Record Center's hours are 8:00 am to 5:00 p.m., Monday through Friday.

West Covina Public Library
1601 West Covina Parkway
West Covina, CA 91790
(626) 962-3541

Rosemead Library
8800 Valley Boulevard
Rosemead, CA 91770
(626) 573-5220

For hours of operation, interested parties may call the libraries at the numbers listed above.

The ESD is also available on the EPA's web site at <http://yosemite.epa.gov/r9/sfund/rodex.nsf> under the San Gabriel Valley (Area 4) heading.

The Puente Valley Cleanup: A Brief History

San Gabriel Valley Groundwater Contamination

Groundwater contamination in the San Gabriel Valley was discovered in 1979. In 1984, the EPA added four portions of the San Gabriel Valley to the national Superfund list: Areas 1 through 4. The Puente Valley OU is referred to as the *San Gabriel Valley Area 4* Superfund Site. Investigations by the EPA and other parties revealed the large extent of groundwater contamination in the Puente Valley OU and the San Gabriel Valley. During the past 20 years,

numerous water supply wells throughout the San Gabriel Valley have been found to be contaminated with chlorinated solvents and other VOCs. In response to the contamination, water companies have shut down contaminated wells, installed new treatment facilities, and taken other steps to ensure that they can continue to supply clean drinking water to the public.

Puente Valley Groundwater Contamination

In 1997, the Puente Valley Steering Committee ("PVSC"), a group of Potentially Responsible Parties ("PRPs") in the Puente Valley OU, completed the Remedial Investigation ("RI"), and EPA completed the Feasibility Study ("FS") for the Puente Valley OU. The RI determined that PCE, TCE, and other VOCs were contaminating the shallow and intermediate groundwater zones, underlying most of the City of Industry, and portions of the cities of La Puente and Walnut. Businesses and industrial operations in Puente Valley and surrounding areas had used these chemicals for degreasing, metal cleaning, and other purposes, and had released them to the ground through a combination of on-site disposal, careless handling, leaking pipes, and other means.

The RI/FS found that the uppermost, or shallow, groundwater zone contains most of the contaminant mass from the various sources. VOC contaminant concentrations in portions of the shallow zone are hundreds of times drinking water standards (see Figure 2). In the intermediate zone, VOC contaminant concentrations are lower, but still exceed drinking water standards (see Figure 3).

EPA and members of the PVSC have since installed and sampled numerous shallow and intermediate zone monitoring wells; modeled the contaminant flow in the shallow and intermediate zones; and completed much of the treatment system design. Ultimately, these efforts will aid in finalizing the shallow and intermediate zone containment designs and lead to the implementation of the groundwater treatment systems that will contain the contamination.

As a part of the design process, more field investigations were conducted to aid in the understanding of the extent of contamination and subsurface conditions. Consequently, the interpretation of the extent of contamination and the characteristics of the subsurface have been refined. More specifically, the shallow zone contamination dips down as it migrates north, towards the mouth of the Puente Valley. This is primarily a result of dipping subsurface geology that characterizes the shallow zone. Likewise, the subsurface geology in the intermediate zone, which lies below the shallow zone, also dips down as the contamination migrates north, towards the mouth of Puente Valley. Consequently, the contamination in the shallow and intermediate zones is located at greater depths at the mouth of the Puente Valley than at upgradient locations.

The vertical characteristics of the subsurface have also been more refined as additional field data has been gathered. This is particularly relevant in the eastern portion of the shallow zone plume, where the strong hydraulic gradient imposed by nearby production wells exerts a vertical pull on the shallow zone contamination into the intermediate zone.

Understanding the aquifer properties is important because the shallow and intermediate zones are being addressed by two separate containment systems with two sets of Performance Criteria. Both the shallow and intermediate zone systems must be contained to prevent the further migration of contaminants laterally and vertically above the respective Performance Criteria. The regional shallow zone Remedial Action includes groundwater containment at the mouth of the Puente Valley. However, one portion of the shallow zone Remedial Action (i.e., south of Puente Creek) will be addressed through a facility-specific Cleanup and Abatement Order ("CAO") administered by the Los Angeles Regional Water Quality Control Board ("RWQCB"). If the facility-specific cleanup work does not adequately contain the contamination south of Puente Creek, EPA may require additional action south of Puente Creek as part of the regional shallow zone Remedial Action.

Mid-Valley Monitoring

Mid-valley monitoring shall consist of a sufficient number of monitoring wells in the mid-valley area in the intermediate and deep zones to monitor potential migration of contamination from the intermediate zone to the deep zone, and to provide an early warning of up-valley conditions that may eventually impact the mouth of Puente Valley. Further discussion of Mid-Valley monitoring is in Section VI of Attachment 1 of this ESD.

Record of Decision

On September 28, 1998, the EPA adopted a cleanup plan for the Puente Valley OU known as the *Puente Valley Operable Unit Interim Record of Decision (ROD)*. The plan addresses the contamination described in the RI/FS. The goals of the 1998 cleanup plan are to prevent exposure of the public to VOC-contaminated groundwater, limit the movement of VOC-contaminated groundwater into clean or less contaminated areas and depths, reduce the impact of continued contaminant migration on downgradient water supply wells, and protect future uses of uncontaminated areas.

The 1998 cleanup plan calls for containing the VOC-contaminated groundwater in the shallow and intermediate groundwater zones at the mouth of the Puente Valley OU, and treating it to remove the VOC contaminants. More specifically, the plan calls for the construction and operation of groundwater extraction wells, treatment facilities, and conveyance facilities capable of pumping and treating the volume of water necessary to treat the VOC-contaminated groundwater from the shallow and intermediate groundwater zones. The plan requires construction of new wells and treatment facilities for vertical and horizontal containment of the contamination in the shallow zone. The plan allows for construction of new facilities or the use of existing treatment systems and pipelines for both zones. It also allows for the use of existing water supply wells to provide intermediate zone containment. Final decisions on extraction rates and locations will be made during the remedial design phase of the project.

The 1998 Interim ROD selected a remedy that "is an interim measure to contain contaminant migration." (Interim ROD, 11-88). The Interim ROD established Performance Criteria for

containment at the mouth of the Puente Valley in two groundwater zones: the shallow zone and the intermediate zone. The Interim ROD shallow zone performance criteria were established as follows: *"The remedial action shall prevent groundwater in the shallow zone with VOC contamination above ten-times the ARARs listed in Table 1 [of the Interim ROD] from migrating beyond its current lateral and vertical extent as described in the RI/FS for the PVOU."* The Interim ROD intermediate zone performance criteria were established as follows: *"The remedial action shall provide sufficient hydraulic control to prevent groundwater in the intermediate zone with VOC contamination above ARARs listed in Table 1 [of the Interim ROD] from migrating beyond the B7 Well Field Area. The B7 Well Field Area is defined as the area encompassed by (1) the wells listed in Table 5 [of the Interim ROD] and (2) the current downgradient extent of contamination above ARARs in the intermediate zone, in the vicinity of the wells located in Table 5 [of the Interim ROD]."*

After the Interim ROD was signed, and Special Notice letters were sent out, the PRPs were unable to make a unified offer for all of the work (i.e., shallow zone and intermediate zone cleanup, and Mid-Valley monitoring). In an effort to keep the cleanup process moving forward as expeditiously as possible, EPA carved out implementation of the remedy such that the intermediate and shallow zone work would be conducted by two different PRP groups or parties.

Reason for this Action: Detection of 1,4-Dioxane and Perchlorate in the Puente Valley OU

After the discovery in 1997 and 1998 of 1,4-dioxane, perchlorate, and NDMA in the Baldwin Park area, and hexavalent chromium in the San Fernando Valley, approximately 10 miles northeast of the San Gabriel Valley, the Los Angeles RWQCB requested that facilities in several areas of the San Gabriel Valley, including the Puente Valley OU, sample their groundwater monitoring wells for these "emergent chemicals." In 2002, the PRPs in the Puente Valley OU were required to sample selected shallow, facility-specific groundwater monitoring wells within areas of VOC contamination for emergent chemicals. In addition, as a part of the remedial design work in the shallow and intermediate zones, new monitoring wells were constructed and sampled.

Hexavalent chromium, NDMA, 1,4-dioxane, and perchlorate were all detected in shallow zone and intermediate zone groundwater in the Puente Valley OU. However, based on the sampling results, only the 1,4-dioxane and potentially perchlorate require treatment. The concentrations of 1,4-dioxane exceeded the State Notification Level in several sampling wells, with the maximum concentration exceeding 20 times the State drinking water Notification Level of 3 ug/L. In addition, historical facility-specific sampling results have shown groundwater concentrations around 5,000 ug/L for 1,4-dioxane. The concentrations of hexavalent chromium and NDMA did not exceed the State Notification Levels and therefore, do not require treatment pursuant to this ESD.

As a result of the additional sampling, EPA has determined that containment of 1,4-dioxane to meet the Performance Criteria of ten-times the Notification Level will be necessary in the shallow zone, and may be necessary in the intermediate zone to meet the Notification Level.

The treatment of perchlorate may be necessary in order to meet surface water discharge requirements pursuant to the Interim ROD, as modified by the ESD. If the end use of the treated water is an off-site activity, such as delivery into a public water supply, perchlorate treatment may be necessary to comply with all Federal, State and local laws in existence at the time, including any necessary drinking water permits. The need to implement the perchlorate treatment systems will be determined during the initial start-up of the shallow zone and intermediate zone Remedial Actions, when actual concentrations of the discharge can be measured to determine the need for perchlorate treatment.

Sampling indicates that the deep zone of the Puente Valley OU is not contaminated, and therefore no cleanup is required in this zone. However, the intermediate zone Performance Criteria require that the contaminated intermediate zone water at the levels listed in Table 2 of Attachment 1 of the ESD be prevented from migrating into the deep, clean zone.

Because the emergent chemicals were discovered after EPA issued the Puente Valley OU Interim ROD in 1998, EPA is now modifying the cleanup decision to address the relevant emergent chemicals. Monitoring data indicates that 1,4-dioxane, and potentially perchlorate, will be the emergent chemicals requiring treatment in the shallow zone. Monitoring data also indicates that 1,4-dioxane and perchlorate may require treatment in the intermediate zone.

The Remedial Action shall prevent groundwater in the shallow and intermediate zones at the mouth of Puente Valley with contamination greater than or equal to ten-times and one-times, respectively, the levels listed in Table 2 of Attachment 1 of the ESD from:

- (1) migrating beyond its lateral extent as measured at the time the Remedial Action containment system is Operational and Functional; and
- (2) migrating vertically into the intermediate zone and deep zone, respectively.

Table 1 shows the significant differences between the remedy as presented in the 1998 Interim ROD and the action now proposed.

Description of Treatment Options

In accordance with the Interim ROD, specific treatment technologies are not prescribed. The treatment technologies used must be sufficient to meet the Performance Criteria.

1,4-Dioxane

Ultra Violet (UV) light treatment system may be used to treat 1,4-dioxane. UV light treatment consists of contaminated water passing through a tank containing numerous ultraviolet lamps. UV light treatment, in combination with injection of an oxidant such as hydrogen peroxide, removes 1,4-dioxane. UV treatment systems have successfully removed 1,4-dioxane from water in locations throughout the United States. A 2,500-gpm treatment system using UV with oxidation for 1,4-dioxane removal is in operation in the Baldwin Park Operable Unit of the San Gabriel Valley sites. UV systems also successfully treat VOCs.

Perchlorate

Since 1997, when perchlorate was discovered in the San Gabriel Valley groundwater basin, technology for removing perchlorate from groundwater has made considerable advancements.

In the biological treatment process, nutrients are added to the contaminated water to sustain microbes that destroy perchlorate. The microbes convert the perchlorate ion to oxygen and chloride, which are present at low levels in all drinking water. The biological treatment process is being used in a full-scale treatment system at the Aerojet Superfund site in northern California. Biological treatment methods are new to many water utilities, but *biologically active* filters have been used in drinking water treatment for decades to help remove particles and biodegradable organic matter.

Another perchlorate-removal technology is ion exchange, in which the perchlorate ion is replaced by chloride, a chemically similar but non-toxic ion. Ion exchange processes have been used in homes and businesses for *softening* hard water for decades. In the Spring of 2001, a 2,500-gallon-per-minute groundwater treatment system using ion exchange to remove perchlorate began operation in the Baldwin Park Operable Unit, producing potable water for use in the San Gabriel Valley.

Other technologies have been proven capable of removing perchlorate from water including resin and to a limited extent liquid-phase granular activated carbon (LGAC). Conventional filtration, sedimentation, or air-stripping technologies cannot remove perchlorate from water.

Treatment Levels

Applicable or Relevant and Appropriate Requirements (ARARs)

The treatment technologies used in the Puente Valley OU will have to be capable of effectively and reliably removing VOCs, 1,4-dioxane, and possibly perchlorate, if treatment is necessary.

ARARs include only substantive, not administrative, requirements, pertain only to on-site activities, and are frozen at the time of the ROD, or ESD. Off-site activities must comply with all applicable federal, state, and local laws, including both substantive and administrative requirements that are in effect when the activity takes place.

The 1998 Interim ROD sets forth the ARARs for the Puente Valley OU for discharges to surface water. These ARARs include: 1) the RWQCB Basin Plan, as applied in the Interim ROD; 2) Resolution 68-16, as applied in the Interim ROD; and 3) the chemical specific ARARs listed in Table 1 of the Interim ROD. The Interim ROD, also sets forth when the chemical-specific ARARs apply to CERCLA § 104(b) activities. Except as noted in this ESD, the ARARs in the Interim ROD remain unchanged.

As noted in the Interim ROD, delivery of treated water into a public water supply is considered to be an off-site activity, and must meet all legal requirements for drinking water in existence at the time the water is served, including obtaining necessary State water supply permits. This ESD does not set any ARARs for treated water delivered into a public drinking water system, and clarifies that the ARARs set forth in the Interim ROD do not apply to the service of water into a public water supply. If any treated groundwater is to be used as drinking water, it must meet all applicable Federal, State, and local drinking water standards in existence at the time the water is served, including any permit requirements.

Consistent with CERCLA section 121(e)(1), an on-site discharge from a CERCLA site to surface waters must meet the substantive National Pollutant Discharge Elimination System Permit ("NPDES") requirements, but need not obtain an NPDES permit nor comply with the administrative requirements of the permitting process. Dischargers under the NPDES program may apply for a general permit if there is an applicable general permit available for the type of discharge contemplated, or a facility specific permit. The NPDES authority under the CWA has been delegated to the state of California, and is outlined in the RWQCB Basin Plan.

If any treated water is to be discharged to surface water, except with respect to the perchlorate and NDMA levels noted below, Region 9 is selecting Table F of the General Permit¹ as an ARAR for discharges to surface water because it generally reflects the substantive requirements, or discharge levels, that the State would require EPA to meet if a permit was necessary. See Table 3 of Attachment 1. However, the General Permit selects 4 ug/L as the discharge limit for perchlorate. Since the General Permit was issued in 2002, California modified the notification level for perchlorate from 4 to 6 ug/L and set the Public Health Goal (PHG) for perchlorate at 6 ug/L. This change is reflected in the perchlorate levels California is requiring dischargers to meet pursuant to recent facility specific NPDES permits. Therefore, this ESD selects 6 ug/L as the ARAR for the surface water discharge of treated water containing perchlorate because it is the level, or substantive requirement, the State would require EPA to meet if EPA applied for a facility specific NPDES permit.

Table F of the General Permit selects 0.00069 ug/L as the discharge limit for NDMA, but provides a non-detect result using a 5 ug/L detection level is deemed to be in compliance. EPA is selecting 0.01 ug/L for NDMA, a "to be considered" (TBC) level, as the discharge level for NDMA because it is the State Notification Level for NDMA, and 0.5 ug/L as the nondetect level which will be deemed to be in compliance with the 0.01 ug/L notification level. EPA is selecting 0.5 ug/L as the nondetect level which will be deemed to be in compliance with the Notification Level because it is the current detection limit for NDMA and because it is an order of magnitude closer to the Notification Level than the 5 ug/L selected in the General Permit.

¹ The General Permit is California Regional Water Quality Control Board, Los Angeles Region (LARWQCB), Order No. R4-2002-0107, "Waste Discharge Requirements for Discharges of Treated Groundwater from Investigation and/or Cleanup of Volatile Organic Compounds Contaminated-Sites to Surface Waters in Coastal Watersheds of Los Angeles and Ventura Counties (GENERAL NPDES PERMIT NO. CAG914001)."

Except as noted below, the ARARs identified in the 1998 Interim ROD remain unchanged.

- 1) Tables 2 and 3 of Attachment 1 of this ESD replace Table 1 of the Interim ROD. Table 2 of attachment 1 lists the chemicals of concern requiring containment and the containment level. Table 3 of attachment 1 lists chemical specific ARARs that apply to discharges to surface water.
- 2) This ESD clarifies that the ARARs set forth in the Interim ROD do not apply to the service of water into a public water supply. If any treated groundwater is to be used as drinking water, it must meet all applicable Federal, State, and local drinking water standards in existence at the time the water is served, including any permit requirements.
- 3) For chemicals requiring containment in Table 2 of attachment 1 that do not have a containment level, monitoring shall be required. However, since no containment levels are provided, these chemicals will not be evaluated to determine whether the Performance Criteria are being met.

Estimated Cost

In the 1998 Interim ROD, EPA estimated the cost to contain and treat the VOC-contaminated groundwater to be approximately \$8.3 million for capital costs associated with construction, and \$1.3 million per year for annual operations and maintenance costs. EPA has revised the cost estimate to account for the additional treatment of the newly detected chemicals in shallow and intermediate groundwater, and a greater volume of water needing treatment. The current capital cost estimate to contain and treat for VOCs and 1,4-dioxane is approximately \$22 million, with an estimated \$2.3 million per year for annual operations and maintenance activities. However, should perchlorate treatment be necessary the total capital cost would be approximately \$23.3 million, and an estimated \$2.9 million per year for annual operations and maintenance activities.

The revised cost estimates are based on an evaluation of the latest treatment options for 1,4-dioxane and perchlorate. However, based on the estimated combined effluent concentrations, perchlorate may not need to be treated.

In addition, the revised cost estimate is also based on the updated extraction and treatment rates necessary to obtain groundwater containment for the Interim Remedial Action. More specifically, the 1998 cleanup plan estimated that the total extraction rate for the shallow and intermediate zones at approximately 1,700 gallon per minute (gpm). Currently, the extraction rate is estimated to be around 1,375 gpm in the shallow zone and approximately 1,000 gpm in the intermediate zone. The revised total estimated extraction rate of 2,375 gpm equates to an approximate 40 percent increase in the volume of water requiring treatment. The cost estimates contained herein do not include the costs of the shallow zone Remedial Action south of Puente Creek, which will be addressed by a facility-specific CAO administered by the RWQCB.

The additional treatment necessary to remove 1,4-dioxane, and potentially perchlorate, as well as the increase in the volume of water needing treatment are the primary factors responsible for the rise in cleanup cost estimates in the Puente Valley OU.

Final Selection of Treatment Technologies

Final selection of treatment technologies for 1,4-dioxane and perchlorate will be completed during the remedial design. However, the need to implement the designed 1,4-dioxane and perchlorate treatment systems will be determined during the initial start-up of the shallow zone and intermediate zone Remedial Actions, when actual concentrations of the treatment plants discharge can be measured to determine the need to install perchlorate treatment.

State Concurrence

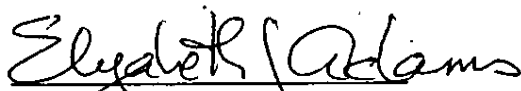
The California Department of Toxic Substances Control documented concurrence with this ESD in a letter dated May, 20, 2005.

Statutory Determination

As required by CERCLA Section 121(d), the modified cleanup plan for the Puente Valley OU remains protective of human health and the environment and will meet all ARARs identified in the 1998 Interim Record of Decision, as modified by this ESD.

Public Participation Compliance

An ESD notice will be published in June 2005 in a local newspaper as required by the NCP, section 300.435(c)(2)(i)(B). The public participation requirements set out in the NCP, sections 300.435(c)(2)(i) and 300.825(a)(2) will continue to be met.



Elizabeth J. Adams, Chief

Superfund Site Cleanup Branch

U.S. Environmental Protection Agency, Region 9

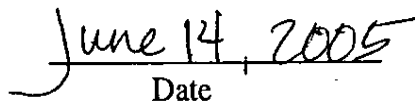

Date

Table 1. Comparison of Cleanup Plans – Most Aspects of the 1998 Plan Have Not Changed

| Remedial Action Categories | Original Cleanup Plan | Updated Cleanup Plan |
|---|---|--|
| Remedial Objectives | Prevent exposure, limit further migration of contaminated groundwater, reduce impacts on down-gradient water supply wells, protect future uses of clean areas. | Same |
| Groundwater Extraction Areas | Extract groundwater from the intermediate zone and the shallow zone at the mouth of Puente Valley | Same |
| Groundwater Treatment Wells | Four wells in the shallow zone and four wells in the intermediate zone | The number of wells will be determined during the Remedial Design and Remedial Action |
| Groundwater Extraction Wells and Rates | Extract contaminated groundwater at rates needed to meet remedial objectives. Determine final rates during remedial design. Initial estimate was 1,700 gpm combined extraction rate for the shallow and intermediate zones. Calls for 8 extraction wells. | Estimated total extraction rate has increased to 2,375 gpm. Number of extraction wells will be determined during the remedial design and remedial action. |
| Groundwater Treatment Technologies | Use air stripping with off gas treatment or liquid-phase granular-activated carbon (LGAC) to remove VOCs from the groundwater. Finalize technologies during remedial design. | Technologies to remove VOCs have not changed. Use of either ion exchange or biological treatment process to remove perchlorate. UV light with oxidation can be used to remove 1,4-dioxane and VOCs. Select technologies during remedial design. |
| Groundwater Containment and Treatment Standards | Design treatment systems to meet Performance Criteria, which are to contain contaminants to below the levels in Table 1 of the Interim ROD in the intermediate zone, and to below 10-times the levels in Table 1 of Interim ROD in the shallow zone. Extracted water must be treated to meet all ARARs. | Areas of containment were modified to reflect the current state of the plume. 1,4-dioxane has been added to the contaminants of concern requiring containment. The basic Performance Criteria remain the same, but have been clarified. Also, the method of measuring compliance with the Performance Criteria has changed (Attachment 1, Compliance with Performance Criteria). Extracted water must be treated to meet all ARARs, as modified by this ESD. |
| Use of Treated Groundwater | Discharge to surface water or to a water supply line for municipal use. | Same |
| Project Costs | Estimated capital costs of \$8.3 million; estimated operation and maintenance costs of \$1.3 million per year. | The estimated capital and O&M cost without perchlorate treatment are approximately \$22 million, and \$2.3 million per year, respectively. The estimated capital and O&M cost with limited perchlorate treatment is estimated at \$23.3 million and \$2.9 million per year. |

ATTACHMENT 1

COMPLIANCE WITH PERFORMANCE CRITERIA

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Compliance with Performance Criteria

1.0 Background

The 1998 Interim Record of Decision (Interim ROD) selected a remedy that "is an interim measure to contain contaminant migration." (Interim ROD, 11-88). The Interim ROD established Performance Criteria for containment at the mouth of the Puente Valley in two groundwater zones: the shallow zone and the intermediate zone. The Interim ROD identifies the zones as follows:

"The shallow zone generally encompasses the upper 100 feet of the saturated aquifer, including the interval between the water table and approximately 150 feet bgs. The intermediate zone generally includes the relatively coarse-grained interval between the shallow zone and deeper portions of the aquifer used for ground-water production." (Interim ROD, 10-3).

Investigations to date conducted subsequent to the 1998 Interim ROD indicate that 1) a clear boundary does not exist between the shallow and intermediate zones; 2) 1,4-dioxane is present at levels requiring containment in the shallow zone, and possibly in the intermediate zone; and 3) groundwater contamination extends further laterally and vertically than was understood at the time of the 1998 Interim ROD. Maps showing EPA's current interpretation of VOCs in the shallow and intermediate zones are shown on Figures 2 and 3, respectively of the ESD.

In addition, investigations have shown that 1,4-dioxane at the mouth of the Puente Valley is generally co-located with the VOCs. Consequently, meeting the Performance Criteria for VOCs should also meet the Performance Criteria for 1,4-dioxane. However, should the 1,4-dioxane need further lateral or vertical containment beyond that which is required for containing VOCs, then additional action would be required.

EPA also determined that the shallow zone extends deeper in the mouth of the valley than was interpreted at the time of the 1998 Interim ROD. EPA now believes that the shallow zone at the mouth of the valley generally encompasses the upper 150 to 200 feet of the saturated aquifer, including the interval between the water table and approximately 250 to 300 feet bgs. The intermediate zone generally includes the relatively coarse-grained interval between the shallow and the deep zones. The deep groundwater zone is the main portion of the aquifer that is used for domestic groundwater production. In general, at the mouth of Puente Valley, the upper part of the deep zone is at a depth of approximately 400 to 430 feet bgs. A few of the domestic production wells at the mouth of Puente Valley have upper-screened intervals within the intermediate zone. The shallow zone shall be deemed not to extend below the depths corresponding to the current upper perforated intervals of San Gabriel Valley Water Company production wells B7C and B11B

(280 and 302 feet below ground surface [bgs], respectively), and Suburban Water Systems production well 147W3 (300 feet bgs).

Monitoring well data demonstrate that the majority of contaminant mass from sources at the mouth of Puente Valley is staying in the shallow zone. However, there is a downward hydraulic gradient in the area and some contaminant mass is migrating downward and into the intermediate zone, particularly in the eastern area. Contamination is observed in the intermediate zone, but at lower concentrations than what is observed in the shallow zone. Currently, the deep zone at the mouth of Puente Valley does not exhibit contamination, and production wells screened only in the deep zone do not exhibit contamination.

Differentiation between the shallow and intermediate zones shall be based on the observed hydrostratigraphy, contaminant concentrations, production well screened intervals, and hydraulic heads. In some areas within the mouth of Puente Valley, it is difficult to differentiate the generalized hydrostratigraphic zones. Consequently, zone differentiation will be based on multiple lines of evidence, including groundwater quality data, hydraulic head data, hydrostratigraphy, and depth with respect to the upper screened intervals of mouth-of-valley production wells (e.g., San Gabriel Valley Water Company wells B7C, B11A, and B11B, and Suburban Water Systems well 147W3). Numerical modeling may also be used to help differentiate the generalized hydrostratigraphic zones. The generalized aquifer zones are described in more detail in the Table 1, below.

Table 1 Puente Valley Operable Unit Aquifer Zones

| Generalized Hydrostratigraphic Zone | Unique Characteristics Relevant to Performance Criteria |
|--|--|
| Shallow Zone | <p>The shallow zone shall be deemed not to extend below the depths corresponding to the current upper perforated intervals of San Gabriel Valley Water Company production wells B7C and B11B (280 and 302 feet below ground surface [bgs], respectively), and Suburban Water Systems production well 147W3 (300 feet bgs).</p> <p>The majority of the contaminant mass at the mouth of the Puente Valley is migrating within the shallow zone. However, there is a downward hydraulic gradient in the area and some contaminant mass is migrating downward and into the intermediate zone, particularly in the eastern area.</p> <p>Depending on the location within the mouth of the Puente Valley, some lateral contaminant migration is toward the northwest, and some toward the north and then northwest.</p> |

| | |
|--------------------------|---|
| Intermediate Zone | <p>The intermediate zone includes water bearing strata in the interval between the shallow zone and the deep zone. The deep zone is the primary source of groundwater production in the mouth of Puente Valley. Several production wells at the mouth of Puente Valley produce water from the intermediate zone (e.g., upper screened intervals of 280 and 300 feet below ground surface). Consequently, the intermediate zone is characterized by a lower hydraulic head than the shallow zone. However, the intermediate zone is not necessarily isolated from the shallow zone everywhere at the mouth of Puente Valley.</p> <p>All the contamination in the intermediate zone originated in the shallow zone, either at the mouth of Puente Valley or at sources up valley. In the western portion of the mouth of Puente Valley, intermediate zone contamination may primarily originate at sources "up valley." In contrast, in the eastern portion of the mouth of Puente Valley, the main source of intermediate zone contamination is shallow zone contamination at the mouth of the Puente Valley that has migrated down into the intermediate zone.</p> <p>As previously noted, several existing potable supply wells at the mouth of Puente Valley produce water from the intermediate and deep zones. Production from the intermediate zone at the mouth of Puente Valley creates a cone of depression or sink for most intermediate zone groundwater in that area. Consequently, these existing production wells are the current downgradient limit for much of the intermediate zone groundwater flow at the mouth of Puente Valley.</p> |
| Deep Zone | <p>The deep groundwater zone is the main portion of the aquifer that is used for domestic groundwater production. In general, at the mouth of Puente Valley, the deep zone extends from a depth of approximately 400 to 1,130 feet bgs. Because production wells at the mouth of Puente Valley produce most of their water from this zone, hydraulic heads are lower in this zone, compared to the shallow and intermediate zones. Also, this zone currently does not exhibit contamination.</p> |

2.0 Performance Criteria

The process by which compliance with shallow and intermediate zone Performance Criteria is measured has been modified and is outlined below. More specifically, the Interim ROD calls for a noncompliance determination as soon as a shallow or intermediate zone compliance well detection shows concentrations above the respective Performance Criteria. In contrast, the modifications presented below allow for a period of time to bring the system back into compliance. In addition, the Performance Criteria language for the shallow and intermediate zones have been clarified, as described below.

2.1 Performance Criteria for the Shallow Zone

The Remedial Action shall prevent groundwater in the shallow zone at the mouth of Puente Valley with contamination greater than or equal to ten-times the levels

listed in Table 2¹ from:

- (1) migrating beyond its lateral extent as measured at the time the shallow zone Remedial Action containment system is Operational and Functional; and
- (2) migrating vertically into the intermediate zone.

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This criterion will require monitoring of both lateral and vertical contaminant migration in the shallow zone, as described below. A combination of new and existing wells will be required to adequately monitor compliance.

2.1.1 Compliance Monitoring of Lateral Migration in the Shallow Zone

Compliance wells shall be located downgradient of contamination exceeding ten-times the levels in Table 2, but within areas where there is detectable contamination. Compliance wells shall be located using best professional judgement, and at locations and depths approved by EPA in consultation with DTSC. A sufficient number of compliance wells shall be installed to monitor contaminant conditions laterally downgradient of the area at the mouth of the Puente Valley where contaminant concentrations exceed ten-times the levels in Table 2.

Compliance wells shall monitor groundwater quality in the same vertical interval of the shallow zone where upgradient containment extraction wells are installed, recognizing the shallow zone has a downward dip to the north and northwest.

2.1.2 Compliance Monitoring of Vertical Migration in the Shallow Zone

A sufficient number of vertical compliance wells shall be located to adequately monitor potential vertical migration at the mouth of Puente Valley. Compliance wells shall be located using best professional judgment and at locations and depths approved by EPA in consultation with DTSC. The vertical compliance wells shall be located at a depth that is below the vertical interval that has contaminant concentrations that exceed ten-times the levels in Table 2, but within an area that is likely to contain detectable concentrations of contaminants, unless there is no vertical interval in the lower shallow zone with contaminant concentrations less than ten-times the levels in Table 2. In that case, vertical compliance wells shall be located in the lower shallow zone where concentrations exceed ten-times the levels listed in Table 2. Hydraulic conditions may change, thus the work party or parties shall make any necessary adjustments to the containment system(s) to accommodate changes in hydraulic conditions that may compromise the effectiveness of the shallow zone containment system.

2.2 Performance Criteria for the Intermediate Zone

¹ The values in Table 2 are identical to Table 1 of the Interim ROD, except 1,4-dioxane is added to the chemicals requiring containment and chemicals that had no associated value in the Interim ROD were deleted.

The Remedial Action shall prevent groundwater in the intermediate zone at the mouth of Puente Valley, with contamination greater than or equal to the levels listed in Table 2 from:

- (1) migrating beyond its lateral extent as measured at the time the intermediate zone Remedial Action containment system is Operational and Functional; and
- (2) migrating vertically into the deep zone.

Compliance with this criterion will require monitoring of lateral and vertical contaminant migration in the intermediate zone, as described below. A combination of new and existing wells will be required to adequately monitor compliance. Monitoring vertical compliance will be required in the deep zone downgradient of the intermediate zone containment system. The deep zone refers to the generalized hydrostratigraphic zone underlying the intermediate zone. Mouth-of-valley- production wells extract much of their water from the deep zone, which has also been referred to as the "production zone." The Remedial Action shall also intercept intermediate zone contamination to prevent it from continuing to impact the B7 Well Field Area, as well as reduce contaminant concentrations in the B7 Well Field Area (as defined in the Interim ROD). A combination of new and existing compliance and monitoring wells will be required to adequately monitor compliance.

2.2.1 Compliance Monitoring of Lateral Migration in the Intermediate Zone

If containment extraction wells are located upgradient of production wells at the mouth of Puente Valley, and the production wells continue to extract groundwater from the intermediate zone, then compliance wells shall be located between the containment extraction wells and the production wells, but within the zone of capture for the production wells. A sufficient number of compliance wells shall be installed at the mouth of Puente Valley to monitor contaminant conditions laterally downgradient of the intermediate zone containment system and upgradient of the protected production wells. Existing contamination at concentrations above the levels in Table 2 in compliance wells between the intermediate zone extraction wells and the production wells shall be monitored for a decreasing trend until concentrations are below Performance Criteria. California Department of Health Services (DHS) required sampling of production wells already impacted by contaminants may also be used to identify a trend of declining concentrations. Monitoring of hydraulic heads may also be used to help demonstrate the effectiveness of the intermediate zone remedy in intercepting further contaminant migration into the B7 Well Field Area.

Compliance wells shall monitor groundwater quality in the same vertical interval of the intermediate zone where upgradient containment extraction wells are installed, recognizing that the intermediate zone has a downward dip to the north and northwest.

If the existing production wells are replaced or modified such that they no longer produce water from the intermediate zone and only produce water from the deep zone, compliance wells shall be located downgradient of contamination exceeding levels in Table 2, but within areas where there is detectable contamination. A sufficient number of compliance wells shall be installed to monitor contaminant conditions laterally downgradient of the area at the mouth of the Puente Valley where

contaminant concentrations exceed levels in Table 2. If intermediate zone compliance wells are installed before the production wells are modified to extract from the deep zone only, then the lateral compliance may be monitored at different wells during the periods before and after the production wells are modified.

If the production wells are used as part of the containment system, then compliance wells shall be installed at locations that will verify groundwater with contaminant concentrations exceeding the levels in Table 2 is not migrating beyond its lateral and vertical extent as measured at the time that the intermediate zone containment system is Operational and Functional.

2.2.2 Compliance Monitoring of Vertical Migration in the Intermediate Zone

Vertical compliance wells shall be located using best professional judgment and at locations and depths approved by EPA in consultation with DTSC. A sufficient number of vertical compliance wells shall be located to adequately monitor potential vertical migration at the mouth of Puente Valley. If feasible, the vertical compliance wells shall be located at a depth that is below the vertical interval that exceeds the levels in Table 2, but within an area that contains detectable contaminant concentrations. However, if a vertical interval in the lower intermediate zone with contaminant concentrations less than the levels in Table 2 is not observed, compliance monitoring for vertical migration will be conducted in the deep zone, as described below. Hydraulic conditions may change, thus the work party or parties shall make any necessary adjustments to the containment system(s) to accommodate changes in hydraulic conditions that may compromise the effectiveness of the intermediate zone containment system.

Monitoring the deep zone downgradient of the intermediate zone containment system shall also be conducted to evaluate vertical migration compliance in the intermediate zone. If, further evaluation demonstrates, and EPA determines that the deep zone contamination is caused by downward migration as a result of a failure of the intermediate zone capture system, rather than contamination that has migrated into the deep zone prior to reaching the mouth-of-valley containment system, then additional action may be necessary in the intermediate zone to ensure vertical containment of contaminants above the levels in Table 2. Deep zone monitoring is discussed further below.

Table 2 Chemicals of Concern Requiring Containment

| Compound | Containment Level (ug/L) | Source |
|---------------------------------------|--------------------------|----------------|
| 1,1-Dichloroethane | 5 | California MCL |
| 1,1-Dichloroethene | 6 | California MCL |
| 1,1,1-Trichloroethane | 200 | Federal MCL |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 1,200 | California MCL |
| 1,1,2-Trichloroethane | 3 | Federal MCLG |
| 1,1,2,2-Tetrachloroethane | 1 | California MCL |
| 1,2-Dichlorobenzene | 600 | Federal MCL |
| 1,2-Dichloroethane | 0.5 | California MCL |
| 1,2-Dichloroethene (total) | 6 ¹ | California MCL |
| 1,2-Dichloropropane | 5 | Federal MCL |
| 1,2,4-Trichlorobenzene | 70 | Federal MCL |
| 1,2,4-Trimethylbenzene | - | - |
| 1,3-Dichlorobenzene | 600 | Federal MCL |
| 1,3-Dichloropropene | 0.5 | California MCL |
| 1,3,5-Trimethylbenzene | - | - |
| 1,4-Dichlorobenzene | 5 | California MCL |
| Benzene | 1 | California MCL |
| bis(2-Ethylhexyl)phthalate | 4 | California MCL |
| Bromochloromethane | - | - |
| Bromodichloromethane ² | 100 | Federal MCL |
| Bromoform ² | 100 | Federal MCL |
| Bromomethane | - | - |
| n-Butylbenzene | - | - |
| sec-Butylbenzene | - | - |
| tert-Butylbenzene | - | - |

¹ Value for the cis-isomer; value for trans-isomer is 10 ug/L

| | | |
|--|-----|----------------|
| Carbon Disulfide | - | - |
| Carbon Tetrachloride | 0.5 | California MCL |
| Chlorobenzene | 70 | California MCL |
| Chloroethane | - | - |
| Chloroform ² | 100 | Federal MCL |
| cis-1,2-Dichloroethene | 6 | California MCL |
| cis-1,3-Dichloropropane | - | - |
| Dibromochloromethane ² | 100 | Federal MCL |
| Dibromochloropropane | 0.2 | Federal MCL |
| Di-n-butylphthalate | - | - |
| Dichlorofluoromethane | C | C |
| Ethylbenzene | 700 | Federal MCL |
| Isopropyl alcohol | - | - |
| Isopropyl benzene | - | - |
| Methylene Chloride | 5 | Federal MCL |
| Naphthalene | - | - |
| Styrene | 100 | Federal MCL |
| Tetrachloroethene | 5 | Federal MCL |
| Total petroleum hydrocarbons | - | - |
| Total petroleum hydrocarbons-volatiles | - | - |
| trans-1,2-Dichloroethene | 10 | California MCL |
| trans-1,3-Dichloropropane | - | - |
| Trichloroethylene | 5 | Federal MCL |
| Trichlorofluoromethane | 150 | California MCL |
| Toluene | 150 | California MCL |

²These chemicals are trihalomethanes (THMs); the MCL listed is for all four THMs: chloroform, bromodichloromethane, dibromochloromethane, and bromoform.

| | | |
|-------------------------|-------|------------------------------|
| Vinyl Chloride | 0.5 | California MCL |
| m,p-Xylene ³ | - | - |
| o-Xylene ³ | - | - |
| Xylenes, total | 1,750 | California MCL |
| 1,4-dioxane | 3 | DHS State Notification Level |

³Value for total xylenes is 10,000 ug/L; no values are provided for individual isomers

Notes: - indicates "no MCL has been established or proposed."

Table 3 ARARs for Discharge to Surface Water ¹

| Constituents | Units | Limitations | |
|------------------------|-------|--------------------|-----------------|
| | | Discharge | |
| | | Daily Maximum | Monthly Average |
| Total Suspended Solids | mg/L | 150 | 50 |
| Turbidity | NTU | 150 | 50 |
| BOD ₅ 20°C | mg/L | 30 | 20 |
| Oil and Grease | mg/L | 15 | 10 |
| Settleable Solids | ml/L | 0.3 | 0.1 |
| Sulfides | mg/L | 1.0 | |
| Phenols | mg/L | 1.0 | |
| Residual Chlorine | mg/L | 0.1 | |
| Acetone | ug/L | 700 | |
| Acrolein | ug/L | 100 | |
| Acrylonitrile | ug/L | 0.059 | |
| Benzene | ug/L | 1.0 | |
| Bromoform | ug/L | 4.3 | |
| Carbon tetrachloride | ug/L | 0.25 ² | |
| Chlorobenzene | ug/L | 30 | |
| Chlorodibromomethane | ug/L | 0.401 ² | |

¹Table F, Effluent Limitations from State of California Regional Water Quality Control Board, Los Angeles Region, *Waste Discharge Requirements for Discharge of Treated Groundwater from Investigation and/or Cleanup of Volatile Organic Compound Contaminated Sites to Surface Water in Coastal Watersheds of Los Angeles and Ventura Counties*, (General Permit No. CAG914001). All values, except perchlorate and NDMA, are taken from Table F of the General Permit. Table F of the General Permit has 4 ug/L for perchlorate and 0.00069 for NDMA.

²If reported detection level is greater than effluent limit, then a non-detect result using 0.5 ug/L detection level is deemed to be in compliance.

| | | | |
|------------------------------------|------|--------------------|------------------|
| Chloroethane | ug/L | 100 | |
| Chloroform | ug/L | 100 | |
| Dichlorobromomethane | ug/L | 0.56 | |
| 1,1-Dichloroethane | ug/L | 5 | |
| 1,2-Dichloroethane | ug/L | 0.38 ² | |
| 1,1-Dichloroethylene | ug/L | 0.057 ² | |
| 1,2-Dichloropropane | ug/L | 0.52 | |
| 1,3-Dichloropropylene | ug/L | 0.5 | |
| Di-isopropyl ether (DIPE) | ug/L | 0.8 | |
| 1,4-Dioxane | ug/L | 3 | |
| Ethylbenzene | ug/L | 700 | |
| Ethylene dibromide | ug/L | 0.05 ² | |
| Lead | ug/L | 5.2 | 2.6 ³ |
| Methyl bromide | ug/L | 10 | |
| Methyl chloride | ug/L | 3 | |
| Methylene chloride | ug/L | 4.7 | |
| Methyl ethyl Ketone (MEK) | ug/L | 700 | |
| Methyl tertiary butyl ether (MTBE) | ug/L | 5 | |
| Naphthalene | ug/L | 21 | |

³Total recoverable metals (based on a hardness of 100 mg/L).

| | | | |
|-------------------------------|------|-------------------|----------|
| N-Nitrosodimethylamine (NDMA) | ug/L | 0.01 ⁴ | RECEIVED |
| Perchlorate | ug/L | 6 ⁵ | |
| Tertiary butyl alcohol (TBA) | ug/L | 12 | |
| 1,1,2,2-Tetrachloroethane | ug/L | 0.17 ² | |
| Tetrachlorethylene | ug/L | 0.8 | |
| Toluene | ug/L | 150 | |
| Total Petroleum Hydrocarbons | ug/L | 100 ⁶ | |
| 1,2-Trans-dichloroethylene | ug/L | 10 | |
| 1,1,1-Trichloroethane | ug/L | 200 | |
| 1,1,2-Trichloroethane | ug/L | 0.60 | |
| Trichloroethylene | ug/L | 2.7 | |
| Vinyl Chloride | ug/L | 0.5 | |
| Xylenes | ug/L | 1750 | |

3.0 Compliance with Performance Criteria

Compliance with Performance Criteria will be confirmed by quarterly sampling of compliance wells. Over time, if it can be demonstrated, based on historical monitoring data, that concentrations are unlikely to exceed Performance Criteria over the quarterly monitoring interval, monitoring intervals may be lengthened, if approved by EPA in consultation with DTSC.

⁴ If reported detection level is greater than the effluent limit, then a non-detect result using 0.5 ug/L detection level is deemed to be in compliance

⁵ Table F of the General Permit has 4 ug/L for perchlorate.

⁶ This includes all fuels, gasoline, diesel, and jet fuel.

Conversely, if monitoring data demonstrate more frequent monitoring is needed, EPA may decrease the monitoring interval.

If compliance wells are initially located downgradient (laterally and vertically) of an area exceeding the Performance Criteria (i.e., ten-times the levels in Table 2 for the shallow zone, and the levels in Table 2 for the intermediate zone) but within areas with detectable contaminant concentrations, then detecting contaminants in those compliance wells at concentrations that exceed the Performance Criteria indicates noncompliance, and the process of determining the need for additional remedial action required to bring the system back into compliance, shall be initiated with due diligence pursuant to a schedule approved by EPA in consultation with DTSC.

There may be instances where there is no area that meets the compliance well location criteria, as described above, but where there still must be compliance monitoring. Although these compliance wells will initially exceed Performance Criteria, they will still serve to monitor compliance with the Performance Criteria by using a trend-based analysis, as described below.

In such instances where compliance wells are initially located within areas that exceed the Performance Criteria (e.g., in the intermediate zone between containment wells and existing production wells, or at the bottom of the shallow zone where concentrations above 10-times the levels in Table 2 may extend into the intermediate zone), then a trend analysis (discussed below), possibly supported by hydraulic monitoring data, will be used to evaluate whether additional response action is necessary to meet Performance Criteria. If the trend analysis indicates increasing concentrations, then additional response action may be appropriate.

Also, if compliance wells are located downgradient (laterally and vertically) of an area that does not initially exceed Performance Criteria, and an increasing trend indicates that it is more likely than not that the Performance Criteria will be exceeded, then the process of determining the need for additional remedial action to avoid noncompliance shall be initiated with due diligence pursuant to a schedule approved by EPA in consultation with DTSC.

Although the majority of the contaminant mass at the mouth of the Puente Valley is migrating within the shallow zone, it is recognized that some contaminant mass is migrating downward into the intermediate zone, particularly in the eastern area. If EPA determines that shallow zone contamination above ten-times the levels in Table 2 continues to migrate into the intermediate zone following implementation of the remedy, the shallow zone work party shall make the necessary adjustments to the shallow zone containment system to meet the Performance Criteria, pursuant to an EPA approved schedule. However, if shallow zone contamination above the levels in Table 2, but less than 10-times the levels in Table 2, migrates into the intermediate zone, it will not constitute an exceedance of the shallow zone Performance Criteria. Migration of shallow zone contamination into the intermediate zone, whether caused by an exceedance of the shallow zone Performance Criteria or not, shall not preclude the intermediate zone work party from meeting

intermediate zone Performance Criteria and protecting drinking water wells, even if additional work is required.

In areas already above the Performance Criteria, a decreasing trend in contaminant concentrations will indicate compliance. If an exceedance is observed, the system will be considered to be in compliance if concentrations exhibit a decreasing trend, ultimately decreasing to below the Performance Criteria (i.e., ten-times the levels in Table 2 for the shallow zone, and the levels in Table 2 for the intermediate zone) within an EPA-prescribed amount of time. If EPA determines that attainment of Performance Criteria is not practical within this time frame, then EPA will establish a reasonable time frame in which Performance Criteria are to be reached. This determination may include an assessment of the hydraulic containment achieved by the remedial pumping. Conversely, an increasing trend (discussed below) indicates non-compliance.

After 3 sequential, but before 12 compliance well and/or sentinel well monitoring events have been conducted, the determination of an increasing trend shall be based on comparing the most recent monitoring data to the upper tolerance limit (UTL) calculated from previous monitoring data (UCL) for an average of 95 percent coverage with 95 percent probability using a Student's t-distribution table). If recent data exceed the UTL, then an increasing trend shall be inferred. Monitoring data shall also be plotted with a best-fit line (arithmetic linear regression) to help observe possible trends. The scale of the plot shall be approved by EPA in consultation with DTSC. After 12 temporal measurements have been collected, then the Kendall test for trend analysis shall be applied. Time-series plots shall continue to be prepared, but without the best-fit line. Only the Kendall test for trend analysis and the comparison with the UTL shall be used for determining compliance with Performance Criteria. Other statistical methods may be used for evaluating trends, if approved by EPA in consultation with DTSC.

Since the contamination does not occur as a homogeneous mass, slight, short-term increases in contaminant concentrations may not accurately indicate that a groundwater containment system is not adequately operating. Consequently, the following process and timing shall be followed to address any observed increasing trends in contaminant concentrations if:

1. an increasing trend is observed in a compliance well with initial concentrations above Performance Criteria or as soon as an exceedance is observed in a compliance well with initial concentrations less than Performance Criteria, then the process of determining the need for additional remedial action to bring the system back into compliance, shall be initiated with due diligence pursuant to a schedule approved by EPA in consultation with DTSC; and/or
2. groundwater concentrations in compliance, sentinel, and/or monitoring wells indicate that it is more likely than not that the Performance Criteria or treatment plant discharge ARARs will be exceeded, then the process of determining the need for additional remedial action to avoid noncompliance shall be initiated with

due diligence pursuant to a schedule approved by EPA in consultation with DTSC.

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4.0 Sentinel Monitoring Wells

EPA requires that sentinel or early-warning monitoring wells be installed far enough laterally and vertically upgradient of the extraction wells in the shallow and intermediate zones to provide advanced warning of varying conditions that are more likely than not to adversely impact the containment system and/or treatment plant (e.g., concentrations that exceed the design limit of the treatment plant, or a previously undetected contaminant that can not be adequately treated by the constructed treatment system).

Required sentinel wells should be far enough laterally and vertically upgradient of the containment extraction wells to provide adequate lead time to respond to the varying conditions, while continuing to maintain compliance. Optional sentinel wells may be located between the containment extraction wells and compliance wells. Sentinel wells can be existing and/or new monitoring wells. Sentinel wells shall be used for both the shallow and intermediate zones.

5.0 Deep Zone Monitoring at the Mouth of Puente Valley

The objectives of the deep zone monitoring at the mouth of Puente Valley are as follows:

- To evaluate the effectiveness of the intermediate zone remedy to protect the deep zone from vertical migration of contamination from the intermediate zone at the mouth of Puente Valley; and
- To monitor the potential for deep zone contamination originating up-valley to adversely impact the deep zone at the mouth of Puente Valley.

To meet the first objective, monitoring of the deep zone, in the mouth of Puente Valley downgradient of the intermediate zone containment extraction wells will be necessary. To meet the second objective, deep zone monitoring at the mouth of Puente Valley upgradient of the intermediate zone containment extraction wells, combined with Mid-Valley monitoring (discussed below) will be necessary.

6.0 Mid-Valley Monitoring

Mid-Valley monitoring shall be conducted in the intermediate and deep zones to monitor potential migration of contamination from the intermediate zone to the deep zone, and to provide some early warning of up-valley conditions that may eventually impact the mouth of Puente Valley. If monitoring indicates the Puente Valley remedy should be expanded to include Mid-Valley

remedial action, a ROD amendment may be necessary to reflect such a modification to the overall remedy. Mid-Valley monitoring will provide EPA with information that will aid in the selection of an appropriate final remedy.

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FIGURE 1

PUENTE VALLEY OPERABLE UNIT MAP OF THE SITE

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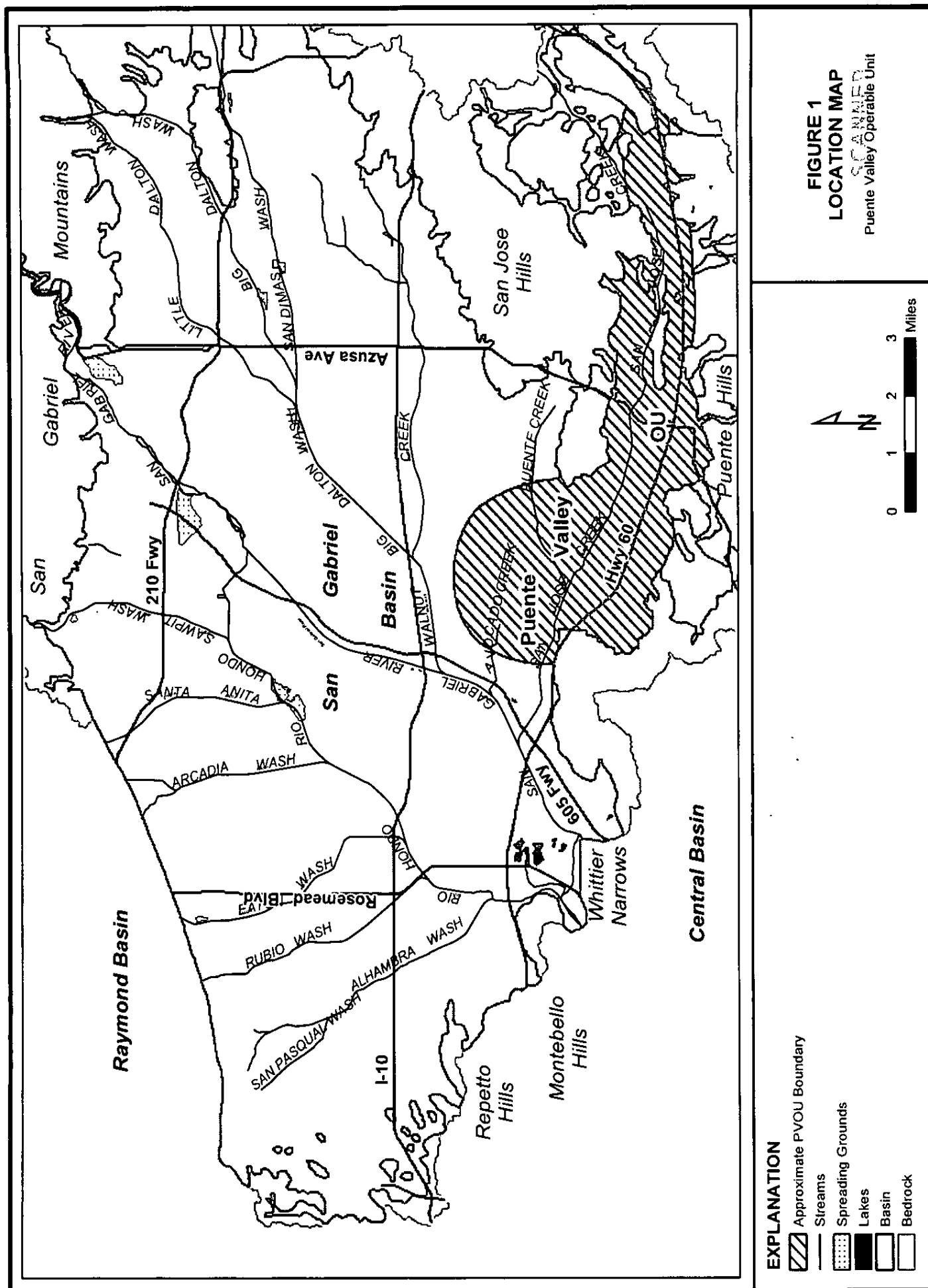


FIGURE 2

SHALLOW ZONE PLUME MAP

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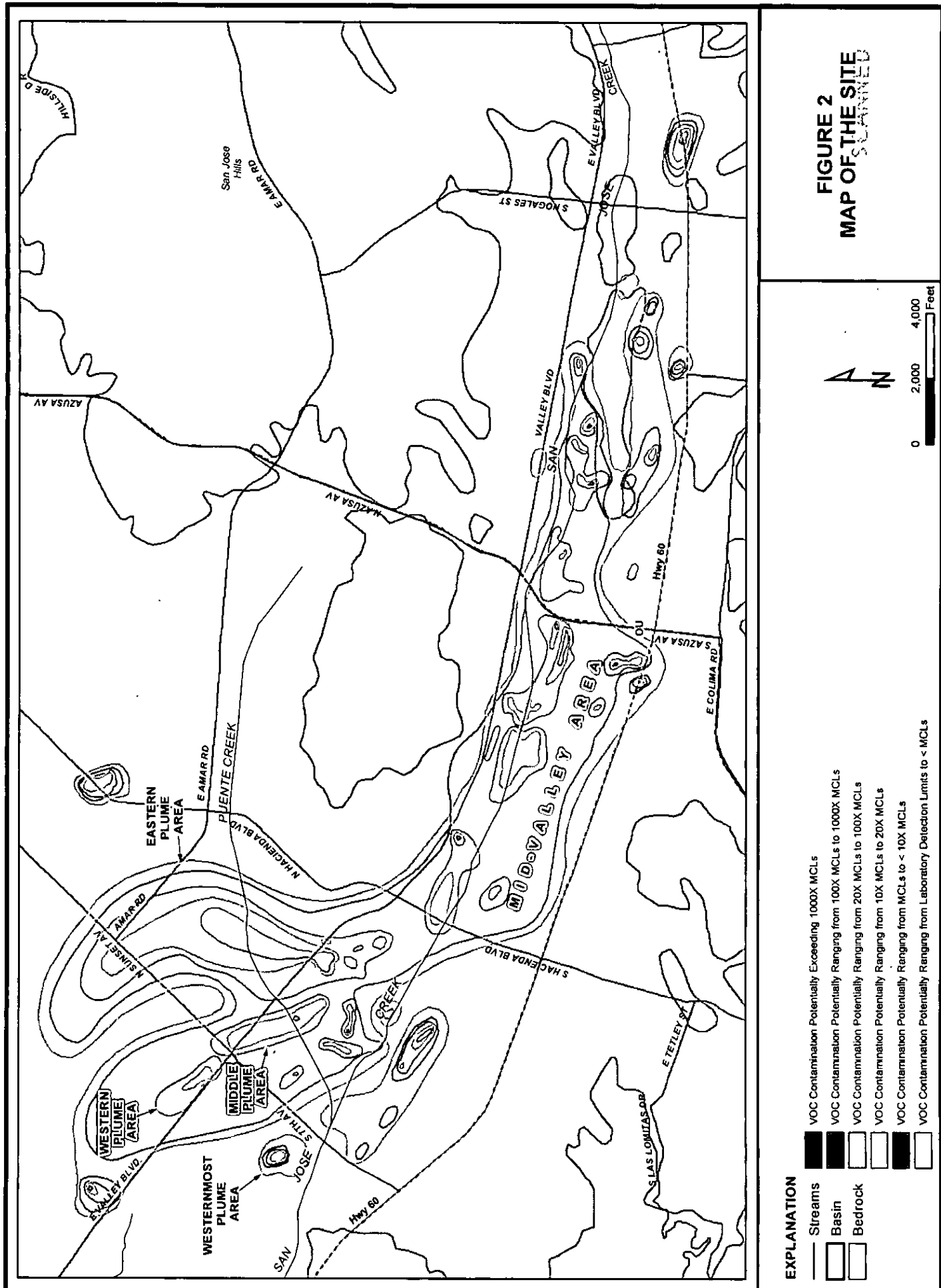
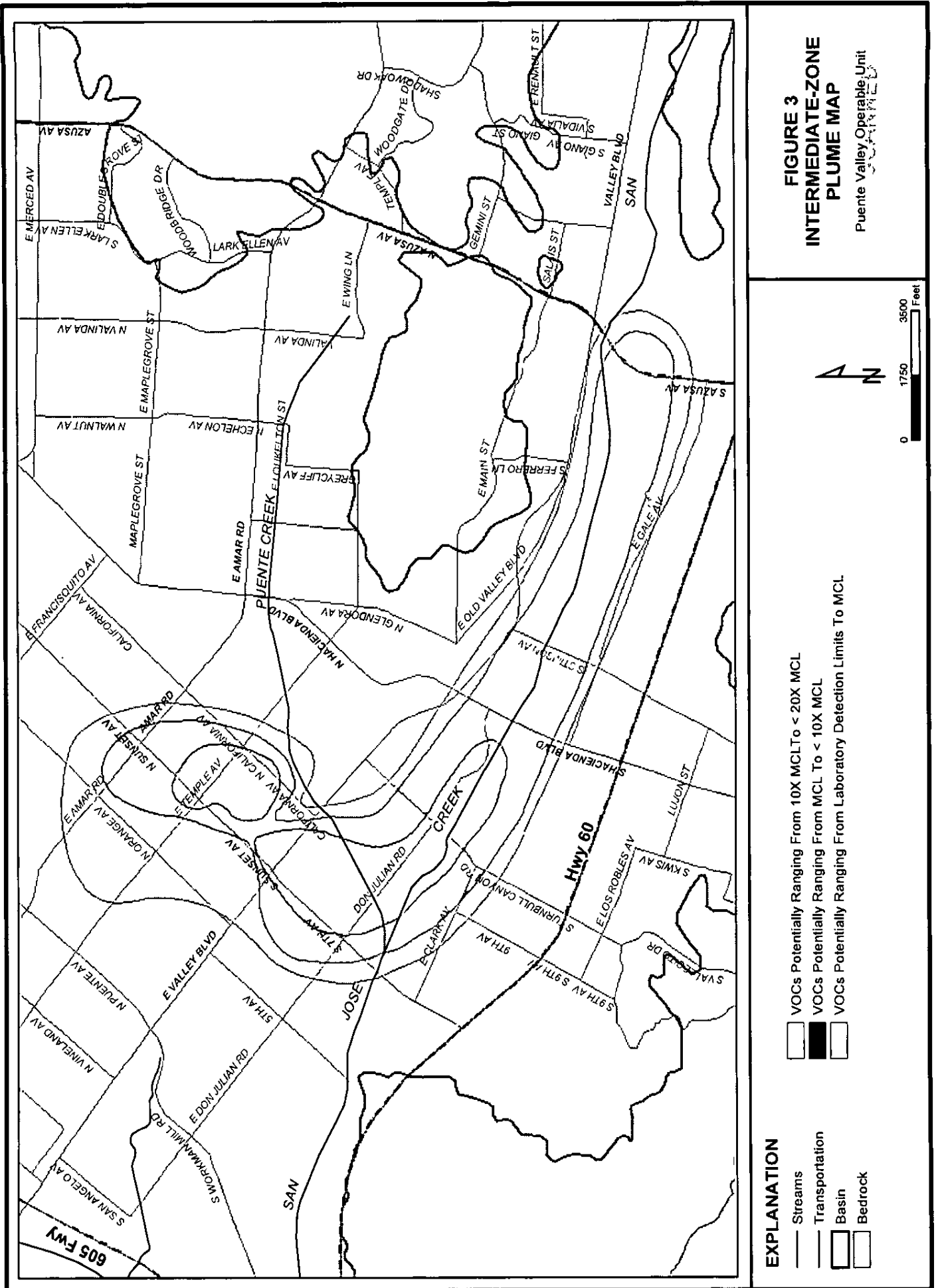


FIGURE 3

INTERMEDIATE ZONE PLUME MAP





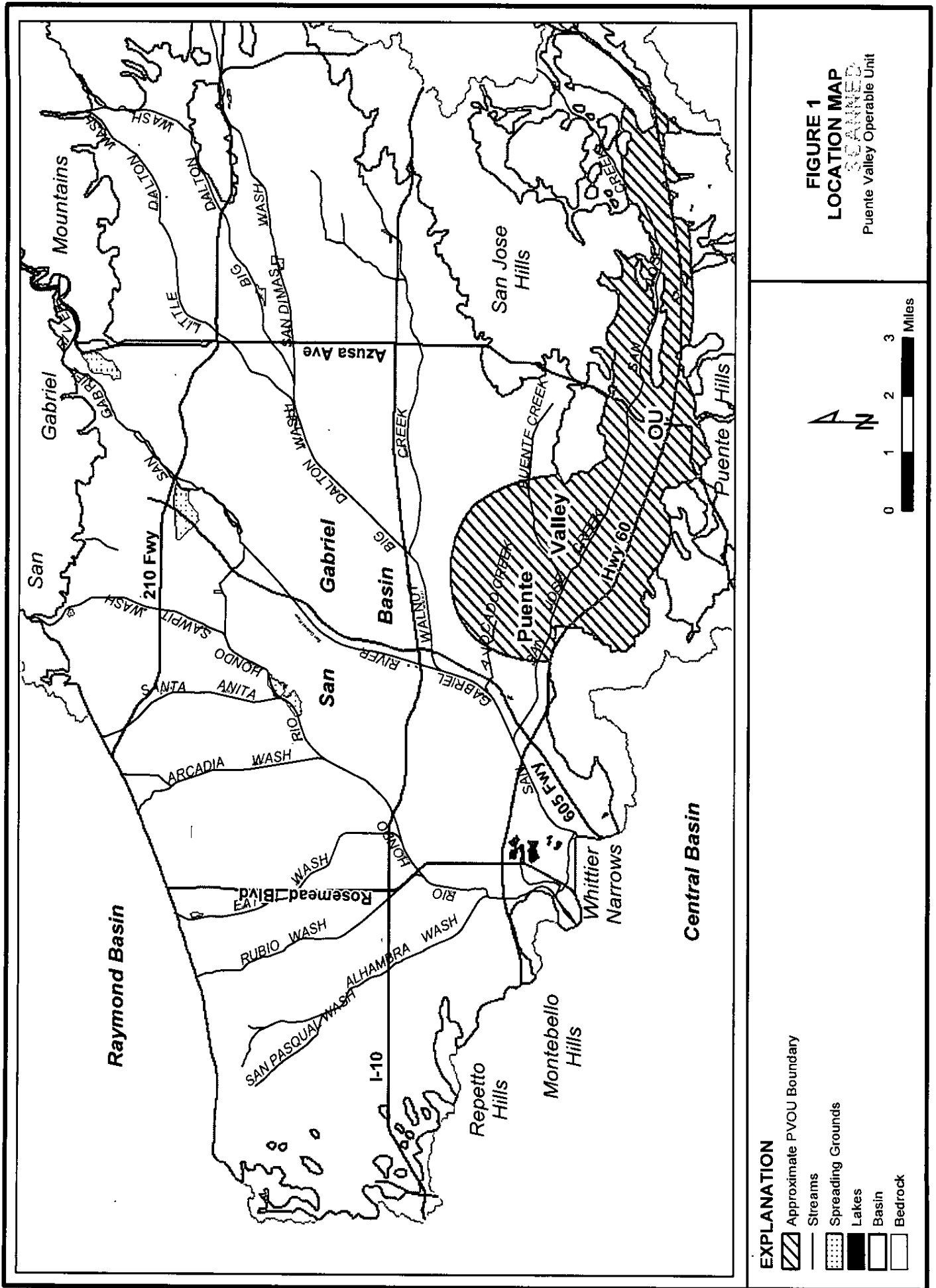
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Appendix C to Consent Decree

United States v. Carrier Corp. (C.D. Cal.)

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Map of the Site





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Appendix D to Consent Decree

United States v. Carrier Corp. (C.D. Cal.)

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RD/RA STATEMENT OF WORK

Puente Valley Operable Unit

SAN GABRIEL VALLEY SUPERFUND SITE, AREA 4

LOS ANGELES COUNTY, CALIFORNIA

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**STATEMENT OF WORK FOR
REMEDIAL DESIGN AND REMEDIAL ACTION
APPENDIX D TO CONSENT DECREE, U.S. v. Carrier Corp. (C.D. Cal.)
Puente Valley Operable Unit
San Gabriel Valley Superfund Site Area 4**

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I Introduction

This Statement of Work (SOW) describes the activities that the Settling Defendants must perform in order to design, construct, operate, maintain, monitor, and evaluate the interim shallow zone Remedial Action north of Puente Creek, as well as Mid-Valley Monitoring. This SOW is based on the 1998 Puente Valley Operable Unit (PVOU) Interim Record of Decision (IROD), as modified in the June 14, 2005 Explanation of Significant Difference (ESD). This SOW is Appendix D to the Puente Valley Operable Unit Shallow Zone Consent Decree ("Decree").

The Puente Valley Operable Unit addresses a several-mile-long area of groundwater contamination extending beneath portions of the City of Industry and La Puente in Los Angeles County, California (see Figure 1 of this SOW). Chemicals of potential concern in the groundwater include volatile organic compounds (VOCs) and other compounds, collectively listed in Table 2 of Attachment 1 of the ESD. Discharge to surface water or any other end use alternative shall comply with all applicable or relevant and appropriate requirements ("ARARs") set forth in the Interim ROD, as modified by the ESD.

The IROD states that the Remedial Action Objectives (RAOs) for the PVOU are to prevent exposure of the public to contaminated groundwater; inhibit vertical and horizontal contaminant migration from the more highly contaminated portions of the aquifer to the less contaminated areas; reduce the impact of continued contaminant migration on downgradient water supplies; and protect future uses of less contaminated and uncontaminated areas.

The IROD selected a remedy that "is an interim measure to contain contaminant migration." (IROD, 11-8). The IROD established Performance Criteria for containment at the mouth of the Puente Valley in two groundwater zones: the shallow zone and the intermediate zone. The IROD identifies the zones as follows:

"The shallow zone generally encompasses the upper 100 feet of the saturated aquifer, including the interval between the water table and approximately 150 feet bgs. The intermediate zone generally includes the relatively coarse-grained interval between the shallow zone and deeper portions of the aquifer used for ground-water production." (IROD, 10-3).

In 2001 EPA issued an unilateral administrative order ("UAO") to Carrier and, later, a separate UAO to TRW Inc. The UAOs allocated components of the remedy in the IROD to the two respondent companies. TRW was to address the intermediate zone at the mouth of the Puente Valley. Carrier was to address the shallow zone at the mouth of the valley.

After Carrier submitted a "Statement of Sufficient Cause" declining to perform the work as specified in its UAO, EPA undertook the Remedial Design (RD) work for the shallow zone as a Fund-lead project.

EPA's subsequent investigation of conditions at the mouth of the Puente Valley did not disclose any hydrologic or lithologic features that mark a clear boundary between the shallow zone and the intermediate zone. EPA's contractor, CH2M HILL, developed hydrogeologic cross sections which interpret the extent of relatively fine- and coarse-grained hydrostratigraphic units, as well as the interpreted vertical distribution of contamination within the shallow zone. Actual subsurface conditions at the mouth of the Puente Valley are not accurately described by terms implying a well-layered system. The alluvial materials underlying the mouth of the Puente Valley OU are very heterogeneous, and are made up of interfingering lenses of sands, silts, and clays of variable thickness and hydraulic properties. The complex stratigraphy underlying the mouth of the Puente Valley has been simplified using generalized assumptions about vertical intervals that appear to have similar characteristics throughout the mouth of the Puente Valley OU.

Three zones were roughly defined to describe general horizons within the aquifer(s) underlying the PVOU, the "shallow," "intermediate," and "deep" zones. In the mid-valley, the shallow zone extends to a depth of approximately 50 to 60 feet bgs. In the mouth of the valley, the shallow zone generally encompasses the upper 150 to 200 feet of the saturated aquifer, including the interval between the water table and approximately 250 to 300 feet bgs. The intermediate zone generally includes the relatively coarse-grained interval between the shallow and the deep zones, which is the portion of the aquifer used heavily for domestic groundwater production. A few of the production wells at the mouth of Puente Valley have upper-screened intervals within the intermediate zone. The shallow zone shall be deemed not to extend below the depths corresponding to the current upper perforated intervals of San Gabriel Valley Water Company production wells B7C and B11B (280 and 302 feet below ground surface [bgs], respectively), and Suburban Water Systems production well 147W3 (300 feet bgs).

Monitoring well data demonstrates that the majority of contaminant mass from sources at the mouth of Puente Valley is staying in the shallow zone. Contamination is observed in the intermediate zone, but at lower concentrations than what is observed in the shallow zone. Currently, the deep zone at the mouth of Puente Valley does not exhibit contamination, and production wells screened only in the deep zone do not exhibit contamination.

Differentiation between the shallow and intermediate zones shall be based on the observed hydrostratigraphy, contaminant concentrations, production well screened intervals, and hydraulic heads. Numerical modeling has also helped define these generalized aquifer zones.

Defining the bottom of the shallow zone contamination, requiring containment, will be based on: 1) depth-discrete sampling that will be conducted during extraction well installation, and 2) previously conducted depth-discrete sampling performed by EPA. A lower limit for the bottom of the shallow zone shall be the depth corresponding to the upper perforated intervals of the production wells in the mouth of Puente Valley (e.g., 280 feet bgs in the vicinity of B7C, and 300 feet bgs in the vicinity of B11B and 147W3). Vertical compliance monitoring wells will be screened in the closest, predominantly sandy zone below the identified extraction zone. Vertical

compliance wells may be completed within the lower shallow zone or the intermediate zone, depending on the depth of the zone requiring containment.

If contamination exceeding ten-times the levels in Table 2 of Attachment 1 of the ESD extends down to the intermediate zone, the lower limit of the shallow-zone extraction will be the closest, predominantly sandy zone above the intermediate zone. In this case, vertical compliance wells will be completed within the lower shallow zone, where concentrations exceed ten-times the levels in Table 2 of Attachment 1 of the ESD.

While EPA pursued a remedial design investigation, discussions between the Settling Defendants and EPA continued. This SOW represents an agreement between the Settling Defendants and EPA regarding the scope of work to be undertaken by the Settling Defendants. The terms of this SOW define the scope and objectives of the work to be performed.

CH2M HILL, under contract with EPA, prepared a preliminary design that is 90% complete and, as a result of the agreement between EPA and the Settling Defendants, has turned it over to the Settling Defendants. EPA's design calls for a proposed treatment plant to receive effluent piped from 10 extraction wells located north of Puente Creek.

The Settling Defendants may alter EPA's design by employing up to three treatment plants. Discharge to surface water or any other end use alternative shall comply with all ARARs set forth in the Interim ROD, as modified by the ESD. However, ARARs do not apply to off-site activities. Where normally required, permits must be obtained for all off-site activities. For example, if treated water will be used for domestic use, it must comply with all permit requirements applicable for drinking water, including a California Department of Health Services 97-005 permit for domestic use of treated water, if applicable.

The Settling Defendants will also not initially install one of the extraction wells in EPA's design. This well is designated as S-1 on Figure 2 of this SOW. Instead, the Settling Defendants will propose a network of Westernmost Plume Area shallow zone monitoring wells and sample these wells quarterly for the first two years to determine if lateral and vertical containment of the plume is required in the shallow zone using the process described below.

After installing the extraction wells, the Settling Defendants will propose a network of compliance and sentinel wells for approval by EPA, using the process set forth below. The Settling Defendants shall also propose sentinel wells, which EPA has required. The required sentinel wells shall be located upgradient of the extraction wells to warn of any higher contaminant concentrations migrating from upgradient.

The extraction well system will commence operation on a schedule to be approved by EPA. EPA may delay startup of operation of the system until extraction commences south of Puente Creek.

The Settling Defendants will also establish and operate a monitoring well system in the Mid-Valley using the process described below.

Using the procedures in this SOW and in the Consent Decree, EPA intends to review deliverables to assess whether or not the Remedial Action will achieve the Performance Criteria, applicable to the Settling Defendants' component of the remedy. EPA review or approval of a task or deliverable shall not, however, be construed as a guarantee of the adequacy of such task or deliverable.

The definitions set forth in Section IV of the Decree shall apply to this SOW unless expressly provided otherwise herein.

II Summary of the Puente Valley OU Shallow Zone Remedial Action

The Remedial Action shall prevent groundwater in the shallow zone at the mouth of Puente Valley, north of Puente Creek, with contamination greater than or equal to ten-times the levels listed in Table 2 of Attachment 1 of the ESD from:

- (1) migrating beyond its lateral extent as measured at the time the shallow zone Remedial Action containment system is Operational and Functional; and
- (2) migrating vertically into the intermediate zone

for a period of 8 years from the Operational & Functional Date established pursuant to Paragraph 50 of the Decree.

Shallow zone contamination at the mouth of Puente Valley as interpreted by EPA is depicted in Figure 2 of this SOW. The Remedial Action at the mouth of the valley, north of Puente Creek, shall be achieved through the installation and operation of a sufficient number of extraction, sentinel, monitoring and compliance wells. EPA shall approve the locations and specifications of all required wells. Settling Defendants shall consult with EPA regarding installation of all other wells so that EPA can ensure the wells will not have an adverse effect on the remedy. In addition, Settling Defendants shall provide EPA with all data from all such wells. Groundwater must be monitored to verify that Performance Criteria are being met and evaluate whether Performance Criteria or treatment plant discharge ARARs are more likely than not be exceeded.

The system shall provide treatment for VOCs and 1,4 Dioxane. Perchlorate may need to be treated to comply with surface water discharge ARARs. The current estimated levels of perchlorate are around the State Notification Level of 6 micrograms per liter (ug/L), and will require treatment if the combined effluent concentrations are above the 6 ug/L level. As provided in the IROD and Los Angeles Regional Water Quality Control Board's (RWQCB) Resolution No. 98-16, treatment for TDS and nitrates will not be necessary as long as discharges to surface water are monitored and the estimated impacts on receiving waters are correct.

The Settling Defendants shall conduct Mid-Valley Monitoring in accordance with the Mid-Valley Area Well Installation Work Plan. As provided in the Consent Decree, the Mid-Valley Area shall extend from Azusa Avenue to Puente Creek. Mid-Valley monitoring requires the installation and monitoring of sufficient wells in the intermediate and deep groundwater zones in the mid-valley area to monitor vertical and horizontal migration in this area. In consultation with EPA, the Settling Defendants shall implement the Mid-Valley Area Well Installation Work Plan to (1) determine if the intermediate zone contamination is migrating into the deep zone, and (2) define any upgradient contamination that may migrate towards the mouth of the valley.

Also, the Settling Defendants shall monitor the Westernmost Plume Area (see Figure 1 of this SOW) for 2 years to determine if lateral and vertical containment of the plume is required in the shallow zone. If, after two years of monitoring, EPA determines that containment is not necessary to prevent shallow zone groundwater in the Westernmost Plume Area with greater than 10-times the levels listed in Table 2 of Attachment 1 of the ESD from (1) migrating beyond its lateral and vertical extent as measured at the end of the two year monitoring period; and (2) migrating vertically into the intermediate zone, then Settling Defendants shall continue monitoring to ensure that containment activities are not required until the eight-year anniversary of the Operational and Functional Date established pursuant to Paragraph 50 of the Decree. If containment of the Westernmost Plume Area is required at any time after the two year monitoring period, then the Settling Defendants shall install the necessary extraction, compliance, sentinel and monitoring wells and treatment system to ensure that the Performance Criteria are met until the eight-year anniversary of the Operational and Functional Date established pursuant to Paragraph 50 of the Decree.

Initial remedial design work shall focus on the installation of extraction, compliance and sentinel wells in the shallow zone at the mouth of the Puente Valley, and monitoring wells in the Mid-Valley Area, and the Westernmost Plume Area.

III Performance Criteria

As specified in the Decree, the Settling Defendants shall meet all Performance Criteria and ARARs. All compliance monitoring data shall be reported in the Quarterly Compliance Monitoring Reports and Annual Performance Evaluation Reports. The IROD, as modified by the ESD, and the Decree require that the Remedial Action provide sufficient hydraulic control of contaminated groundwater in the shallow zone to meet the Performance Criteria.

A. Shallow Zone Compliance with Performance Criteria

The Remedial Action shall prevent groundwater in the shallow zone at the mouth of Puente Valley with contamination greater than or equal to ten-times the levels listed in Table 2 of Attachment 1 of the ESD from:

- (1) migrating beyond its lateral extent as measured at the time the shallow zone Remedial Action containment system is Operational and Functional; and
- (2) migrating vertically into the intermediate zone

for a period of 8 years from the Operational & Functional Date established pursuant to Paragraph 50 of the Decree.

Shallow zone contamination is distributed across the mouth of Puente Valley (see Figure 2 of this SOW).

The Settling Defendants shall monitor compliance with this criterion at a minimum of eight (8) EPA approved compliance wells that meet the following requirements:

(1) Wells shall be located laterally and vertically downgradient of groundwater contamination exceeding ten-times the levels listed in Table 2 of Attachment 1 of the ESD, but within areas with detectable levels of contamination in the shallow zone

(2) Wells shall be screened at lengths of 20 feet or less located within the shallow zone. Longer screened intervals may be appropriate in limited situations, subject to EPA evaluation and approval on a case-by-case basis.

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To avoid exceedances of the shallow zone Performance Criteria, the Settling Defendants shall monitor and sample the extraction, monitoring, and sentinel wells as required in this SOW. The data collected from these wells will be analyzed in conjunction with other parameters (e.g. capture zones, groundwater flow directions, the hydrogeology, and treatment plant influent concentrations) to evaluate whether the Performance Criteria or discharge ARARs are more than likely than not to be exceeded. The groundwater model will be used to support these analyses as appropriate.

If the Performance Criteria or discharge ARARs are exceeded, or if it is more likely than not that the Performance Criteria or discharge ARARs will be exceeded, then the Settling Defendants shall notify the EPA (1) no later than seven (7) days after the Settling Defendants receive information indicating noncompliance or (2) no later than seven (7) days after the Settling Defendants determine that non-compliance is more likely than not, as outlined in the schedule in Section V of this SOW.

The Settling Defendants shall initially conduct quarterly sampling, and the results shall be reported in the Quarterly Compliance Monitoring Reports and Annual Performance Evaluation Reports. The frequency of sampling may be decreased if the monitoring data supports such a decrease, and the Settling Defendants obtains EPA approval. Conversely, compliance monitoring frequency may be increased if EPA or the Settling Defendants deem it necessary. For example, it may be necessary to increase the monitoring frequency if a well is out of compliance with the Performance Criteria. Contaminant concentrations at the compliance wells will be the sole criteria for evaluating compliance with Performance Criteria. EPA expects that groundwater containment actions will be implemented sufficiently upgradient of the compliance wells to provide enough of a buffer zone to allow additional actions to be taken, if necessary, to ensure compliance.

If an increasing trend, as defined by Attachment 1 to the ESD, is observed in a compliance well with initial concentrations greater than the Performance Criteria, or as soon as an exceedance is observed in a compliance well with initial concentrations less than Performance Criteria; then the Settling Defendants shall implement the sequence of events described in Table 1 below.

If groundwater concentrations in compliance, sentinel or monitoring wells indicate that an exceedance is more likely than not of the Performance Criteria or the treatment plant discharge ARARs; then the process of determining the need for additional remedial action to avoid noncompliance shall be initiated pursuant to Table 2 below.

Table 1 Trend-Based Response Action(s) for Compliance Exceedances

| Sequence Monitoring Event | Response Action |
|---|--|
| Quarter 1 (0-3 months): Increasing trend, as defined by Attachment 1 to the ESD, observed in a compliance well with initial concentrations above Performance Criteria or as soon as an exceedance is observed in a Compliance Well with initial concentrations less than Performance Criteria | Start evaluating options for additional response actions, submit Draft Compliance Action Plan (including schedule), continue monitoring, and re-evaluate trend |
| Quarter 2 (3-6 months): If trend is still increasing in a compliance well with initial concentrations above Performance Criteria or if an exceedance still exists in a Compliance Well with initial concentrations less than Performance Criteria | Implement additional response actions per EPA-approved Compliance Action Plan (and schedule), and continue monitoring |
| Quarter 3 (6-9 months): If trend is still increasing in a compliance well with initial concentrations above Performance Criteria or if an exceedance still exists in a Compliance Well with initial concentrations less than Performance Criteria | Continue monitoring, evaluating trend, and implementing additional response actions as necessary |
| Quarter 4 (9-12 months): If trend is still increasing in a compliance well with initial concentrations above Performance Criteria or if an exceedance still exists in a Compliance Well with initial concentrations less than Performance Criteria | Continue monitoring, evaluating trend, and implementing additional response actions as necessary |
| Quarter 5 (12-15 months): If trend is still increasing in a compliance well with initial concentrations above Performance Criteria or if an exceedance still exists in a Compliance Well with initial concentrations less than Performance Criteria | Continue monitoring, evaluating trend, and implementing additional response actions as necessary |
| Quarter 6 (15-18 months): If trend is still increasing in a compliance well with initial concentrations above Performance Criteria or if an exceedance still exists in a Compliance Well with initial concentrations less than Performance Criteria | EPA may determine that the Performance Criteria have been exceeded if decreasing trends are not observed |
| Quarter 7 (18-21 months): If trend is still increasing in a compliance well with initial concentrations above Performance Criteria or if an exceedance still exists in a Compliance Well with initial concentrations less than Performance Criteria | If the Performance Criteria has not been reached (i.e., ten-times the levels in Table 2), then EPA may establish a reasonable time frame in which Performance Criteria are to be reached |

Table 2 Trend-Based Response Action(s) for Potential Compliance Exceedance

| Sequence Monitoring Event | Response Action |
|---|--|
| Quarter 1 (0-3 months): After a determination by EPA that it is more likely than not that compliance, sentinel and/or monitoring well data indicate that (1) the Performance Criteria will be exceeded; and/or (2) the discharge ARARs will be exceeded | Start evaluating options for additional response actions, submit Draft Response Action Plan (including schedule), continue monitoring, and evaluating data |
| Quarter 2 (3-6 months): If compliance, sentinel and/or monitoring well data still indicates the it is more likely than not that (1) and/or (2) in Quarter 1 above will occur | Finalize plans for additional response actions, submit Final Response Action Plan (including schedule), continue monitoring, and evaluating trend |
| Quarter 3 (6-9 months): If compliance, sentinel and/or monitoring well data still indicates the it is more likely than not that (1) and/or (2) in Quarter 1 above will occur | Implement additional response actions, per approved Response Action Plan and schedule, continue monitoring, and evaluating data |
| Quarter 4 (9-12 months) If compliance, sentinel and/or monitoring well data still indicates the it is more likely than not that (1) and/or (2) in Quarter 1 above will occur | Continue implementing Response Action Pan, continue monitoring and evaluating data |
| Quarter 5 (12-15 months) If compliance, sentinel and/or monitoring well data still indicates the it is more likely than not that (1) and/or (2) in Quarter 1 above will occur | Continue implementing Response Action Pan, continue monitoring and evaluating data |
| Quarter 6 (15-18 months) If compliance, sentinel and/or monitoring well data still indicates the it is more likely than not that (1) and/or (2) in Quarter 1 above will occur | Continue implementing Response Action Pan, continue monitoring and evaluating data |
| Quarter 7 (18-21 months) If compliance, sentinel and/or monitoring well data still indicates the it is more likely than not that (1) and/or (2) in Quarter 1 above will occur | If these actions are not sufficient to avoid an exceedance of (1) Performance Criteria in compliance wells, or (2) discharge ARARs; then additional action may be necessary, and EPA may establish a reasonable time frame in which (1) and (2) are to be satisfied. |

B. Additional Requirements

Implementation of the Remedial Action shall not adversely affect production wells that are not part of the Remedial Action (i.e., shall not increase the migration of contamination into the wells).

C. Groundwater Treatment and Disposal

In accordance with the Interim ROD, and the ESD, specific treatment technologies are not prescribed. The treatment technologies used must be sufficient to meet the Performance Criteria. EPA anticipates that all extracted groundwater will be treated with liquid-phase carbon adsorption and advanced oxidation. EPA anticipates that either biological or ion exchange processes to remove perchlorate will be utilized, if treatment for perchlorate is necessary to meet discharge requirements. If alternative treatment technologies are proposed, EPA will evaluate the alternative technologies in accordance with the criteria specified in 40 CFR Section 300.430 during remedial design.

The extraction and treatment of groundwater shall comply with ARARs, and include, but may not be limited to the following:

1. For discharges to surface water, treatment systems shall be designed and operated to reduce the concentrations of contaminants to at or below the levels listed in Table 3 of Attachment 1 of the ESD prior to discharge. Treatment systems shall also comply with the water quality objectives and discharge limits for discharge of treated water as outlined in the IROD, as modified by the ESD, including RWQCB Resolution 98-016. As set forth in the Interim ROD, and ESD, Resolution 98-016 provides that treatment for TDS and nitrates is not required for discharges to surface water, provided that such discharges are monitored and the estimated impacts on receiving waters are correct;
2. Best available control technology for toxics (T-BACT) shall be used on new stationary operating equipment, so the cumulative carcinogenic impact from air toxics does not exceed the maximum individual cancer risk limit of ten in one million (1×10^{-5}), as required by South Coast Air Quality Management District (SCAQMD) Rule 1401;
3. Extraction and treatment systems shall comply with the substantive portions of SCAQMD Regulation XIII, comprising Rules 1301 through 1313, pertaining to new source review;
4. Extraction and treatment systems shall comply with limits in visible emissions (SCAQMD Rule 401) and particulate concentrations (SCAQMD Rule 403);
5. Extraction and treatment systems shall not cause the discharge of material that is odorous or causes injury, nuisance or annoyance to the public (SCAQMD Rule 402);
6. Extraction and treatment systems shall comply with the substantive requirements in Title 22, California Code of Regulations (CCR), Sections 66264.601 -.603 for *miscellaneous units*, and related substantive closure requirements in Sections 66264.111-.115 for air strippers or granular activated carbon (GAC) contractors;
7. Extraction and treatment systems shall comply with container and storage requirements in Title 22, CCR, Sections 66264.170 -.178 for the storage of contaminated groundwater over 90 days; and
8. Extraction and treatment systems shall comply with Title 22, CCR, Sections 66262 and 66268 and other State Hazardous Waste Control Act (HWCA) requirements for storage and disposal if the spent carbon is classified as a hazardous waste.

D. Mid-Valley Monitoring

The Settling Defendants shall design, construct, and operate a Mid-Valley monitoring well network in accordance with the Mid-Valley Area Well Installation Work Plan.

IV List of Deliverables and Other Tasks

The Settling Defendants shall submit plans, specifications, and other deliverables for EPA review and approval, as specified below. The Settling Defendants shall provide four (4) copies to EPA and three (3) copies to DTSC of each final written deliverable, in an unbound format suitable for reproduction; additional copies shall be provided as stated in the Decree. Final written deliverables shall also be provided in electronic format.

The Settling Defendants shall implement quality control procedures to ensure the quality of all reports and submittals to EPA. These procedures shall include but are not limited to: internal technical and editorial review; verification of calculations; and documentation of reviews, problems identified, and corrective actions taken.

As described in Section XI of the Decree, EPA may approve, disapprove, or modify each deliverable. Major deliverables are described below and shall be submitted according to the schedule in Section V of this SOW.

A. Compliance and Sentinel Well Network Plan

The Settling Defendants shall demonstrate to EPA's satisfaction that each proposed compliance well is appropriate for measuring compliance, as described in Section III (Performance Criteria) of this SOW, and as described in the ESD. The Settling Defendants must demonstrate that each proposed sentinel well upgradient of the extraction wells is appropriate for detecting the migration of shallow zone contamination exceeding ten-times the levels listed in Table 2 of Attachment 1 of the ESD, and as described in Section III of this SOW. Prior to installation of compliance and sentinel wells, the Settling Defendants shall submit to EPA a Compliance and Sentinel Well Network Plan, describing the proposed locations and specifications of the compliance and sentinel wells. All existing wells that may be used for compliance or sentinel purposes must be described in this plan. Additionally, all proposed new compliance and sentinel wells must be described. The plan shall also set forth a method for siting and testing additional wells in the event that initially completed wells are not appropriate for their intended purpose.

This plan shall include sampling procedures for confirming the adequacy of all proposed compliance and sentinel wells. The plan shall provide for sampling of each proposed compliance and sentinel well at least two times to demonstrate that each well is suitable for its intended purpose. The plan shall provide for additional confirmation sampling, as required for proposed compliance wells with initial indeterminate sampling results. The plan shall provide for the Settling Defendants, after completing and testing the wells, to select a sufficient number of wells for designation as compliance and sentinel wells. After installation and sufficient sampling of each proposed compliance well (no fewer than eight) and sentinel wells, EPA shall determine whether each well, proposed in the plan by the Settling Defendants, is acceptable for its proposed use.

B. Additional Wells

In addition to the installation of compliance and sentinel monitoring wells, the Settling Defendants will also install additional wells as needed, to adequately define the extent of groundwater contamination in the shallow zone to determine areas that may require hydraulic control or capture to meet the Performance Criteria in the shallow zone north of Puente Creek. The Compliance Monitoring Plan will be amended as determined necessary by EPA to describe the installation and monitoring of any additional wells.

C. Compliance and Sentinel Well Installation Complete Report

After EPA approval of the Compliance and Sentinel Well Network Plan, the Settling Defendants shall submit a Compliance and Sentinel Well Installation Complete Report, signifying the time at which compliance monitoring will begin. This report will include all sampling results for all proposed compliance and sentinel wells. After EPA approval of the Compliance and Sentinel Well Installation Complete Report and after groundwater extraction commences, the Settling Defendants shall assume no less frequent than quarterly sampling of each well to assess whether the Performance Criteria are being met in the shallow zone, and submit quarterly Compliance Monitoring Reports and Annual Performance Evaluation Reports, as required by the Compliance Monitoring Plan, described in this SOW.

D. Compliance Monitoring Plan

Compliance monitoring activities shall be performed in accordance with the approved Compliance Monitoring Plan, to evaluate whether the Performance Criteria, as described in Section III of this SOW, and in the IROD, as modified by the ESD are met. Compliance with Performance Criteria will be measured solely by the sampling results of the compliance wells.

The Compliance Monitoring Plan shall specify the well type, and its intended purpose; locations of compliance wells and any sentinel wells; sampling methods; and, at a minimum, a quarterly sampling frequency. The Settling Defendants shall submit the Compliance Monitoring Plan no later than the specified date in the approved schedule in Section V of this SOW. Compliance with the Performance Criteria will be confirmed by results from sampling at EPA-approved compliance wells on a quarterly basis, as outlined in Attachment 1 of the ESD, and shall be documented in Quarterly Compliance Monitoring Reports and Annual Performance Evaluation Reports. Within seven (7) days of receipt of information indicating noncompliance or determining that noncompliance is more likely than not, EPA shall be notified in accordance with Section V of this SOW. The Compliance Monitoring Plan shall address the following requirements:

1. Data Collection Parameters

The Settling Defendants shall specify the locations of compliance and sentinel wells in the shallow zone. Such wells shall be adequate to perform their respective functions. The Compliance Monitoring Plan shall establish procedures

for providing sufficient information for EPA to assess whether the Performance Criteria are being met, including data collected from sentinel wells that will aid in the determination of whether noncompliance is more likely than not at compliance wells. The Settling Defendants shall specify sampling methods, and, at a minimum, a quarterly sampling frequency.

2. Computer Modeling

Groundwater modeling is an ongoing process. Additional modeling beyond what has already been completed will be necessary. The Settling Defendants shall perform computer model simulations of groundwater flow and contaminant migration to help determine whether the Remedial Action is sufficiently containing the groundwater contamination during all anticipated recharge conditions (i.e., demonstrating that simulated particles originating in contaminated areas converge into the extraction wells); taking into account all other hydraulic conditions created or influenced by any intermediate zone pumping and water production well pumping; and propose and evaluate modifications to the extraction plan, if needed, using an appropriate 3-dimensional, time-varying model of groundwater flow. All appropriate modeling improvements shall be made, and should also be done in accordance with EPA recommendations in the Technical Memorandum, "*Technical Review: Puente Valley Operable Unit, Wells B7C and B11B Investigation Report of Findings, Prepared by the Puente Valley Steering Committee*," and any new transmissivity measurements, and other relevant information. The Settling Defendants shall submit to EPA any changes in critical modeling assumptions, and discuss their affect on recommended extraction rates and well locations. The Compliance Monitoring Plan shall describe proposed changes to the calibration of existing models or plans to calibrate a new model, or propose a schedule for providing such information. All models must be calibrated by the Settling Defendants and approved by EPA prior to use.

3. Split Sampling

The Compliance Monitoring Plan shall specify procedures for coordination of EPA collection of split or replicate samples.

4. Contingency Action

The Compliance Monitoring Plan shall propose contingency plans to be used in the event that additional compliance monitoring activities are required to evaluate compliance with Performance Criteria, in accordance with this SOW and the ESD. Contingency actions could include increases in monitoring frequency, and installation of additional groundwater monitoring wells. If discharge ARARs are exceeded, or if compliance well monitoring data indicates non-compliance with Performance Criteria, the Settling Defendants shall submit a Compliance Action Plan to EPA in accordance with the schedule in Section V of this SOW. The Compliance Action Plan may include, but not necessarily be limited to, the nature

of the exceedance, all relevant data leading up to the exceedance, proposed operational modifications or design and construction efforts for additional remedial action activities and additional compliance monitoring, in accordance with Table 1 of this SOW.

After the Compliance Action Plan is approved by EPA, the Settling Defendants shall perform the corrective action(s) and document such action(s) in the Compliance Correction Report.

If concentrations in compliance, sentinel and/or monitoring wells demonstrate that it is more likely than not that an exceedance at a compliance well will occur, or treatment plant discharge ARARs will be exceeded, then the Settling Defendants shall submit a Response Action Plan to EPA in accordance with the schedule in Section V of this SOW. The Response Action Plan may include, but not necessarily be limited to, the basis on which it was determined that an exceedance of Performance Criteria or discharge ARARs is more likely than not, all relevant data leading up to the determination, proposed operational modifications or design and construction efforts for additional remedial action activities to avoid or mitigate the potential for an exceedance and additional compliance monitoring, in accordance with Table 2 of this SOW.

E. Remedial Design Work Plan

The Settling Defendants shall submit a RD Work Plan which describes the management strategy for design of the Remedial Action ("RD Work Plan"). The RD Work Plan must be reviewed and approved by EPA in accordance with Section XI of the Decree. The Work Plan shall include:

1. Project Description

The RD Work Plan shall include a description of the work to be implemented by the Settling Defendants. The work should focus on the location, installation and monitoring of compliance and sentinel wells in the shallow zone at the mouth of Puente Valley, north of Puente Creek, and should be described in the Compliance and Sentinel Well Network Plan and the Compliance and Sentinel Well Completion Report, as described in Section IV of this SOW. The initial work should also focus on the installation of monitoring wells in the Westernmost Plume Area, and in the Mid-Valley Area, and should be described in their respective monitoring plans, outlined Section IV of this SOW. The RD Work Plan shall also include extraction locations; treatment technologies; discharge of the treated water (i.e., recipients, delivery locations, delivery pressures, and delivery rates); locations of major project components; existing equipment and facilities to be used as part of the Remedial Action; and other key aspects of the project. The RD Work Plan shall briefly discuss the condition, anticipated longevity, and any limitations in the use of each existing facility, if applicable.

2. Extraction Well Installation and Testing Work Plan

The Settling Defendants have submitted, and EPA has approved of the Extraction Well Installation and Testing Work Plan, and the Settling Defendants shall implement this plan, attached to the Consent Decree, and in accordance with Section F, and the schedule set forth in Section V of this SOW.

3. Mid-Valley Area Monitoring Well Installation Work Plan

The Settling Defendants have submitted an EPA-approved Mid-Valley Area Monitoring Well Installation Work Plan and the Settling Defendants shall implement this plan, attached to the Consent Decree, and in accordance with Section F, and the schedule set forth in Section V of this SOW:

The Mid-Valley monitoring area will be certified by EPA to be Operational and Functional only after the entire Mid-Valley monitoring well network is completed, and at least one round of sampling of all the monitoring wells has taken place.

4. Westernmost Plume Area Monitoring Well Installation Work Plan

The Settling Defendants have submitted an EPA-approved Westernmost Plume Area Monitoring Well Installation Work Plan and the Settling Defendants shall implement this plan, attached to the Consent Decree, and in accordance with Section F, and the schedule set forth in Section V of this SOW.

The Westernmost Plume Area will be certified by EPA to be Operational and Functional only after the entire Westernmost Plume Area monitoring well network is completed, and at least one round of sampling of all the monitoring wells has taken place.

5. Schedule

The RD Work Plan shall identify the initiation and completion dates for each required design activity and deliverable required by the Decree and this SOW, consistent with the schedule included as Section V of this SOW. The RD Work Plan shall also identify the approximate timing of meetings and other activities which may require EPA participation, but are not identified in Section V of this SOW.

The schedule shall indicate that coordination meetings will initially occur on a monthly basis and may be decreased in frequency as deemed appropriate by EPA. The coordination meetings shall address project status, problems, solutions, and schedule. A representative of the Settling Defendants shall prepare a meeting summary to document all decisions made, issues outstanding, schedule changes, planned follow up, and assignments.

6. Description of Planned Community Relations Activities to Be Conducted During Remedial Design and Remedial Action.

In accordance with Sections X and XXXI of the Decree, the Settling Defendants shall cooperate with EPA in providing information regarding the Work to the public. As requested by EPA, the Settling Defendants shall participate in the preparation of such information for dissemination to the public and in public meetings which may be held or sponsored by EPA to explain activities at or relating to the Site.

7. Sampling and Analysis Plan. In accordance with Sections VI and VIII of the Decree, and Section IV.L.1 of this SOW, the Settling Defendants shall prepare a Sampling and Analysis Plan (SAP), or update an existing Plan to perform compliance monitoring and carry out any other field investigations needed to complete the Remedial Design, and construct and operate the Remedial Action. The Plan shall discuss the timing of data collection activities, including data collection activities needed to establish baseline conditions before startup of the Remedial Action.

If any of the information requested is not known at the time the RD Work Plan must be submitted, and omitting the information from the work plan will not prevent compliance with any other requirements of this SOW, the Settling Defendants may submit the information at a later date. If any information is omitted, the Settling Defendants shall note in the work plan that the missing information was not available and specify when it will be submitted.

F. Remedial Design

Remedial Design activities shall include the preparation of clear and comprehensive design documents, construction plans and specifications, and other design activities needed to implement the work and satisfy Performance Criteria and ARARs set forth in this SOW, and the IROD, as modified by the ESD. All plans and specifications shall be developed in accordance with relevant portions of the U.S. EPA's Superfund Remedial Design/Remedial Action Handbook (EPA 540/R-95/059), and in accordance with the schedule set forth in Section V of this SOW.

1. Conceptual Design

Unless modified by EPA, the Conceptual Remedial Design submittal shall include and address, at a minimum, the following:

- a. The concepts, assumptions, standards, and preliminary interpretations and calculations to be used in the Preliminary Design;
- b. Plans for monitoring total dissolved solids (TDS) and nitrates;
- c. Anticipated volume or flow of water, brine, air, sludge, and other media requiring treatment or disposal;

- d. Assumed treatment plant influent quality;
- e. Discussion of how the Performance Criteria will be met in the shallow zone;
- f. Discussion of how the ARARs under any discharge scenario will be met;
- g. Discussion of the filtration, disinfection, corrosion control, or other treatment requirements in addition to removal of site contaminants;
- h. Assumed treatment technologies and/or treatment trains (for all media and byproducts) and initial treatment process flow diagrams; and;
- i. Listing and discussion of the relative importance of siting criteria for new extraction wells, treatment facilities, pipelines, and other facilities, along with preliminary locations and alignments;
- j. A schedule outlining the major critical path items and deliverables for the Remedial Action.

2. Preliminary Design

The Settling Defendants shall submit a Preliminary Design in accordance with the schedule set forth in Section V of this SOW. EPA approval is required before proceeding with further design work, unless EPA agrees otherwise. It is assumed that the design-build contractor will prepare the Preliminary Design and subsequent design submittals. Unless modified by EPA, the Preliminary Design submittal shall include or address, at a minimum, the following:

- a. A detailed Design Basis Report that presents and justifies the concepts, assumptions, standards, and preliminary interpretations and calculations used in the design. The Design Basis Report shall include:
 - (1) A description of how TDS and nitrates data from extraction well sampling will be used to project treatment plant effluent and receiving water concentrations, as specified in the IROD.
 - (2) Volume or flow rate of water, brine, air, sludge, and other media requiring treatment or disposal;
 - (3) A summary of water quality or other data to be used during design but not previously provided to EPA, along with an analysis of whether the data confirm assumptions, recommendations, or conclusions made to date for the Puente Valley OU;
 - (4) Assumed treatment plant influent quality over the design life of the treatment system, with a description of the methodology used to develop the estimate (including discussion of the likelihood and magnitude of short-term and long-term changes in influent concentrations);
 - (5) A detailed explanation of how the Performance Criteria for the shallow zone will be met;

- (6) Updated discussion of how the ARARs under any discharge scenario will be met;
 - (7) An updated discussion of the filtration, disinfection, corrosion control, or other treatment requirements in addition to removal of site contaminants;
 - (8) Assumed treatment technologies and/or treatment trains (for all media and byproducts) and preliminary treatment process flow diagrams;
 - (9) Preliminary sizing of treatment system and other Remedial Action components;
 - (10) Expected treatment facility removal capacity for all groundwater constituents requiring removal;
 - (11) Expected delivery locations, rates, and pressures for the treated groundwater, and other conveyance system assumptions for supplying or discharging treated groundwater;
 - (12) Interconnection requirements for delivery of treated groundwater, if any (e.g., connection to existing water distribution systems);
 - (13) The degree of automation and planned level of operator oversight;
 - (14) System control strategy, including the level of reliability, redundancy, or specific damage prevention features needed in each major component of the Remedial Action to respond to seismic events, power outages, equipment failure, system maintenance, operator error, or deviations from design assumptions;
 - (15) Listing and discussion of the relative importance of siting criteria for new extraction wells, treatment facilities, pipelines, and other facilities, along with preliminary locations and alignments; and
 - (16) Estimate of the distance from each proposed extraction location to the location assumed in computer model simulations completed in support of the Puente Valley OU containment Remedial Action and an evaluation of whether additional computer modeling activities are needed to verify the effectiveness of the actual extraction locations.
- b. A preliminary Construction Schedule for construction and implementation of the Remedial Action which identifies timing for initiation and completion of major milestones;
 - c. An updated list of permits, regulatory agency approvals, MOUs, access or use agreements, easements, and properties developed or acquired to date; copies of permits, approvals, and agreements not previously supplied to EPA; and activities and schedules for obtaining outstanding items required before start of construction (e.g., for use of existing facilities or disposition of the treated water);

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- d. Preliminary plans, specifications, and drawings, of groundwater extraction, treatment, conveyance, and sentinel and monitoring systems; and
- e. An outline of required specifications.

3. Intermediate Design

The Settling Defendants shall not be required to submit an Intermediate Design, but may seek EPA review of design concepts or documents if desired.

4. Prefinal/Final Design

The Settling Defendants shall submit the Prefinal Design when the design effort is complete in accordance with the schedule set forth in Section V of this SOW. The Prefinal Design shall fully address all comments made on the Conceptual/Preliminary Design Report (and during the Intermediate Design review, if it occurs) and, if not previously addressed, be accompanied by a memorandum indicating how the comments were incorporated into the Prefinal Design. The Pre-Final Design submittal shall include, at a minimum, the following: (1) revised plans and specifications; and (2) the Construction Quality Assurance Plan (CQAP). The CQAP shall describe the approach to quality assurance during construction activities. The Prefinal Design documents shall be certified by a Professional Engineer registered in the State of California.

The Prefinal Design shall serve as the Final Design if EPA has no further comments and provides its approval. The Prefinal Design submittals shall include reproducible drawings and specifications; and a complete set of construction drawings in full and one-half size reduction. The Final Design should also include a schedule for construction, and bringing the entire system to the point of being Operational and Functional.

The Settling Defendants shall construct the shallow zone remedy on a design / build basis, and shall provide the prefinal and final design requirements in the Remedial Action Construction Complete Report. This approach and the requirements thereof shall be described in the RA Work Plan.

G. Remedial Action

The Settling Defendants shall implement the shallow zone Remedial Action. During the design period, in preparation for implementation of the Remedial Action and in accordance with the schedule included in Section V of this SOW, the Settling Defendants shall submit a Construction Quality Assurance Plan, a Construction Health and Safety Plan, and any other updates as necessary. The Construction Quality Assurance Plan must be reviewed and approved by EPA prior to the initiation of the Remedial Action.

Within 30 days after the approval of the final design submittal, Settling Defendants shall submit to EPA and DTSC a work plan for the performance of the Remedial Action at the Site ("Remedial Action Work Plan"). The Remedial Action Work Plan shall provide for construction and implementation of the shallow zone remedy north of Puente Creek and Mid-Valley Monitoring as set forth in the approved Final Design, and the achievement of the shallow zone Performance Criteria, in accordance with this Consent Decree, the Interim ROD, as modified by the ESD, the SOW, and the design plans and specifications developed in accordance with the Remedial Design Work Plan and approved by EPA. Upon its approval by EPA, the Remedial Action Work Plan shall be incorporated into and become enforceable under this Consent Decree. At the same time the Remedial Action Work Plan is submitted to EPA, Settling Defendants shall submit to EPA and the State a Health and Safety Plan for field activities required by the Remedial Action Work Plan which conforms to the applicable Occupational Safety and Health Administration and EPA requirements including, but not limited to, 29 C.F.R. § 1910.120.

1. Remedial Action Work Plan

The Remedial Action Work Plan shall include, but not be limited to, the following: (1) a schedule for completion of the Remedial Action; (2) a method for selection of the contractor; (3) a methodology for satisfying permitting requirements (if any); (4) a methodology for implementation of the Operations and Maintenance Plan; (5) a methodology for implementation of the Contingency Plan; (6) a tentative formulation of the Remedial Action team; (7) procedures and plans for the decontamination of equipment and the disposal of contaminated materials; and (8) a schedule for developing and submitting other required Remedial Action plans and reports. These plans and reports shall include, but may not be limited to: (a) a General Monitoring Plan; (b) an Extraction Well Completion Report; (c) a Westernmost Plume Well Completion Report; (d) a Mid-Valley Monitoring Well Completion Report; (e) a Compliance and Sentinel Well Completion Report; (f) an Operations and Maintenance Plan; (g) a Contingency Plan; and (h) a Construction Quality Control Plan (by constructor). The Remedial Action Work Plan also shall include the methodology for implementation of the Construction Quality Assurance Plan, a schedule for implementation of all Remedial Action tasks identified in the final design submittal, and the initial formulation of Settling Defendants' Remedial Action Project Team (including, but not limited to, the Supervising Contractor).

Upon approval of the Remedial Action Work Plan by EPA, after a reasonable opportunity for review and comment by DTSC, Settling Defendants shall implement the activities required under the Remedial Action Work Plan. The Settling Defendants shall submit to EPA and DTSC all plans, submittals, or other deliverables required under the approved Remedial Action Work Plan in accordance with the approved schedule for review and approval pursuant to Section XI (EPA Approval of Plans and Other Submissions). Unless otherwise directed by EPA, Settling Defendants shall not commence physical Remedial Action activities at the Site prior to approval of the Remedial Action Work Plan.

a. Description of the Responsibility and Authority of All Organizations and Key Personnel Involved With the Remedial Action.

The RA Work Plan shall include a description of the responsibilities and qualifications of key personnel expected to direct or play a significant role in the Remedial Action, or Operation and Maintenance (O&M), including the Settling Defendants' Project Coordinator, Designer, Construction Contractor, Construction Quality Assurance personnel, and Resident Engineer. The Work Plan shall define lines of authority and provide brief descriptions of duties.

b. Schedule

The RA Work Plan shall identify the initiation and completion dates for each required construction activity, inspection, and deliverable required by the Decree and this SOW, consistent with the schedule included as Section V of this SOW. The RA Work Plan shall also identify the approximate timing of meetings and other activities which may require EPA participation, but are not identified in Section V of this SOW.

The schedule shall indicate that coordination meetings will initially occur on a monthly basis and may be decreased in frequency as deemed appropriate by EPA. The coordination meetings shall address project status, problems, solutions, and schedule. A representative of the Settling Defendants shall prepare a meeting summary to document all decisions made, issues outstanding, schedule changes, planned follow up, and assignments.

c. Contracting Strategy

The RA Work Plan shall describe the planned contracting strategy, including a description of the process for evaluation and approval of construction changes and EPA review and approval of significant changes.

d. Plans for Satisfying All Permitting Requirements and Acquiring Property, Leases, Easements, or Other Access.

The RA Work Plan shall list all permits, property, leases, and easements required for implementation of the Remedial Action; permits, property, leases, and easements acquired to date; and a schedule for submittal of permit applications and acquisition of property, leases, or easements not yet obtained.

Settling Defendants shall ensure that their right of access for all treatment facilities, pipelines, wells and any other property for which access is needed to implement the Work required by the Decree is transferred to EPA, the State, and/or their authorized representatives (including other PRPs performing work at the Site) before the eight-year anniversary of the Operational and Functional Date established pursuant to Paragraph 50 of the Decree.

Where normally required, permits must be obtained for all off-site activities. For example, if treated water will be used for domestic use, it must comply with all permit requirements applicable for drinking water, including a California Department of Health Services 97-005 permit for domestic use of treated water, if applicable. The Settling Defendants are not required to obtain permits for on-site remedial activities, but must comply with all substantive requirements of permits identified as ARARs. If permits will not be obtained for an onsite activity where a permit is normally required, the Settling Defendants shall describe all consultative or coordination activities planned to identify and satisfy the substantive requirements.

e. Third Parties Necessary for Design, Construction, or Operation of the Remedial Action.

The RA Work Plan shall describe the roles and responsibilities of the Settling Defendants, participating water producers and water agencies, if applicable, and other parties expected to play a significant role in the construction, or operation of the Remedial Action. The RA Work Plan shall summarize and provide copies of Memorandums of Understanding (MOUs) and draft or final agreements with any water producers and other third parties expected to participate in implementation of the Remedial Action.

If legally-binding agreements are not in place, the RA Work Plan shall describe commitments made to date and planned efforts to secure necessary commitments including a schedule. If the participation of a third party is uncertain, the RA Work Plan shall describe alternatives to be implemented in the event that the party does not fulfill its planned role. Possible third party roles include agreeing to the use of existing equipment (e.g., groundwater extraction wells, water treatment facilities, pipelines), treatment plant operation, and acceptance of treated groundwater.

f. Identification of Any Concerns about the Quantity, Quality, Completeness, or Usability of Water Quality or Other Data Upon Which the Design Will Be Based

The Settling Defendants shall provide a description of additional data collection efforts, if any, required for completion of the Remedial Action. The Settling Defendants shall consider whether any data are needed to verify that critical design assumptions remain valid (e.g., the areas of groundwater contamination requiring hydraulic containment). If additional data are required, the Settling Defendants shall propose a schedule for preparation of a Sampling and Analysis Plan (or Addendum) and implementation of the Plan.

g. Updated General Monitoring Plan

Update, as appropriate, the General Monitoring Plan outlined in Section IV.I. of this SOW.

2. Extraction Well Completion Report

The Settling Defendants shall submit an Extraction Well Completion Report in accordance with the schedule set forth in Section V of this SOW. EPA approval is required before proceeding with further remedial work, unless EPA agrees otherwise. In the report, a registered Professional Engineer and the Settling Defendants' Project Coordinator shall state that the construction of the Extraction Wells have been completed in accordance with the RD and RA Work Plans submitted under this SOW. The written report shall provide a synopsis of the work defined in this SOW, describe deviations from the RD and RA Work Plans, include as-built drawings signed and stamped by a Professional Engineer, provide actual costs of the Remedial Action (and Operation and Maintenance to date), and provide a summary of the results of operational and performance monitoring completed to date.

3. Mid-Valley Monitoring Well Completion Report

The Settling Defendants shall submit a Mid-Valley Monitoring Well Completion Report in accordance with the schedule set forth in Section V of this SOW. EPA approval is required before proceeding with further remedial work, unless EPA agrees otherwise. In the report, a registered Professional Engineer and the Settling Defendants' Project Coordinator shall state that the construction of the Mid-Valley monitoring wells have been completed in accordance with the RD and RA Work Plans submitted under this SOW. The written report shall provide a synopsis of the work defined in this SOW, describe deviations from the RD and RA Work Plans, include as-built drawings signed and stamped by a Professional Engineer, provide actual costs of the Remedial Action (and Operation and Maintenance to date), and provide a summary of the results of operational and performance monitoring completed to date. The Mid-Valley monitoring area will be certified by EPA to be Operational and Functional only after the entire Mid-Valley monitoring well network is completed, and at least one round of sampling of all the monitoring wells has taken place.

4. Westernmost Plume Area Monitoring Well Completion Report

The Settling Defendants shall submit a Westernmost Plume Area Monitoring Well Completion Report in accordance with the schedule set forth in Section V of this SOW. EPA approval is required before proceeding with further remedial work, unless EPA agrees otherwise. In the report, a registered Professional Engineer and the Settling Defendants' Project Coordinator shall state that the construction of the Westernmost Plume Area monitoring wells have been completed in accordance with the RA Work Plan submitted under this SOW. The written report shall provide a synopsis of the work defined in this SOW, describe deviations from the RA Work Plan, include as-built drawings signed and stamped by a Professional Engineer, provide actual costs of the Remedial Action (and Operation and Maintenance to date), and provide a summary of the results of operational and performance monitoring completed to date. The Westernmost Plume Area will be certified by EPA to be Operational and Functional only after the entire Westernmost Plume Area monitoring well network is completed, and at least one round of sampling of all the monitoring wells has taken place.

5. Compliance and Sentinel Well Completion Report

See Section IV.C of this SOW.

6. Preconstruction Meeting

A Preconstruction Meeting shall be held after selection of the construction contractor but before initiation of any construction. More than one Preconstruction meeting may be necessary as there may be different construction start times for different portions of the Remedial Action. The meeting(s) shall include the Settling Defendants' representatives and interested federal, state and local government agency personnel; shall define the roles, relationships, and responsibilities of all parties; review work area security and safety protocols; review any access issues; review the construction schedule; and review the construction quality assurance procedures.

The Settling Defendants shall ensure that the results of the Preconstruction Meetings(s) are documented and transmitted to all parties in attendance, including the names of people in attendance, issues discussed, clarifications made, and instructions issued.

7. Remedial Action Construction

The Settling Defendants shall implement the Remedial Action as detailed in the approved RA Work Plan and approved Final Design.

8. Prefinal Construction Inspection(s)

Within fourteen (14) days after the Settling Defendants believe that construction is complete and the Remedial Action, or a discrete portion of the Remedial Action, is functioning properly, the Settling Defendants shall notify the U.S. EPA for the purpose of conducting a Prefinal Construction Inspection to be attended by EPA and the Settling Defendants. Other invitees shall include the Project Coordinator and other federal, state, and local agencies with a jurisdictional interest. However, the Remedial Action will only be certified by EPA as Operational and Functional pursuant to Paragraph 50, after the Final Construction Inspection for the last portion of the Remedial Action.

The objective of the Construction Inspection(s) is to determine whether construction is complete and the Remedial Action, or a discrete portion of the Remedial Action, is Operational and Functional. Any outstanding construction items discovered during the inspection shall be identified and noted on a bullet list. The Settling Defendants shall certify that the equipment is effectively meeting the purpose and intent of the specifications. Retesting shall be completed where deficiencies are revealed. A Prefinal Construction Inspection Report shall be submitted by the Settling Defendants which: outlines the outstanding construction items for the Remedial Action, or a discrete portion of the Remedial Action; actions required to resolve the items; completion date for the items; and an anticipated date for a Final Construction Inspection. The Prefinal Construction Inspection Report can be in the form of a bullet list or letter.

9. Final Construction Inspection

Within fourteen (14) days after completion of any work identified in the Prefinal Construction Inspection Report, the Settling Defendants shall notify the U.S. EPA for the purpose of conducting a Final Inspection. The Final Inspection shall consist of a walk-through inspection by U.S. EPA, the State, and the Settling Defendants. The Prefinal Inspection Report shall be used as a checklist with the Final Inspection focusing on the outstanding construction items identified in the Prefinal Construction Inspection. Confirmation shall be made that outstanding items have been resolved.

Any outstanding construction items discovered during the inspection still requiring correction shall be identified and noted on a punch list. If any items are still unresolved, the inspection shall be considered to be a Prefinal Construction Inspection requiring another Prefinal Construction Inspection Report and subsequent Final Construction Inspection.

10. Remedial Action Construction Complete Report

As specified in the schedule set forth in Section V of this SOW, after construction is completed on the entire Remedial Action, the Pre-Certification Inspection shall be conducted to determine if the entire Remedial Action system is Operational and Functional, and the Settling Defendants shall submit a Remedial Action Construction Complete Report. In the report, a registered Professional Engineer and the Settling Defendants' Project Coordinator shall state that the construction of the Remedial Action has been completed in accordance with the RD and RA Work Plans submitted under this SOW. The written report shall provide a synopsis of the work defined in this SOW, describe deviations from the RD and RA Work Plans, include as-built drawings signed and stamped by a Professional Engineer, provide actual costs of the Remedial Action (and Operation and Maintenance to date), and provide a summary of the results of operational and performance monitoring completed to date. The report shall contain the following statement, signed by a responsible corporate official of the Settling Defendants or the Settling Defendants' Project Coordinator:

"To the best of my knowledge, after thorough investigation, I certify that the information contained in or accompanying this submission is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

a. Pre-Certification Inspection

In accordance with the schedule in Section V of this SOW and Paragraph 50 of the Decree, a Pre-Certification Inspection shall be scheduled after construction of the Remedial Action is completed (i.e., all extraction, monitoring, compliance, and sentinel wells; pipeline; and treatment plant(s)), and the Settling Defendants believe the Remedial Action is Operational and Functional.

b. Pre-Certification Report

In accordance with the schedule in Section V of this SOW and Paragraph 51 of the Decree, a Pre-Certification Report shall be completed, outlining all the data necessary to show that the Remedial Action is Operational and Functional. In the Report, a registered Professional Engineer and the Settling Defendants' Project Coordinator shall certify that all phases of the Remedial Action are Operational and Functional. The written report shall provide a summary of the results of operational and performance monitoring completed to date and shall provide documentation to substantiate the Settling Defendants' certification in full satisfaction with the Decree, including, but not limited to, relevant data presented in accordance with Performance Evaluation Reports and Quarterly Compliance Monitoring Reports described in this SOW. The report shall contain the following statement, signed by a responsible corporate official of the Settling Defendants or the Settling Defendants' Project Coordinator:

"To the best of my knowledge, after thorough investigation, I certify that the information contained in or accompanying this submission is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

EPA will review the Pre-Certification Report, and if necessary, provide comments outlining the necessary activities that must be undertaken in order for the Remedial Action to be Operational and Functional. A Final Pre-Certification Report shall be submitted after all necessary activities are completed. Upon EPA approval of the Final Pre-Certification Report, EPA will certify all phases of the Remedial Action as Operational and Functional. As provided in Paragraph 50 of the Decree, Settling Defendants may request and EPA may grant, certification that a phase of the Remedial Action is Operational and Functional; provided, however, that any such certification shall be conditioned on such phase remaining Operational and Functional at the time Settling Defendants request certification for the final phase of the Remedial Action. In the event Settling Defendants request certification that a phase of the Remedial Action is Operational and Functional, and such request is granted, the resulting certification shall not affect the Operational and Functional Date. As provided in Paragraph 50 of the Decree, upon approval of the certification report by EPA or pursuant to a ruling by the Court, the Operational and Functional Date shall be the date when the last report requesting certification of the final phase of the Remedial Action was submitted.

H. Operations and Maintenance

Operation and Maintenance (O&M) shall be performed in accordance with the approved Operation and Maintenance Manual and Plan. Operation and Maintenance shall mean, for purposes of this SOW, all response actions after EPA's Operational and Functional determination pursuant to Paragraph 50 of the Decree. Operations and Maintenance activities outlined in the Operations and Maintenance Plan shall begin as soon as any portion of the remediation system is operating.

1. Operation and Maintenance Plan

The Settling Defendants shall submit an Operation and Maintenance (O&M) Plan which will include a plan to perform the following O&M activities:

a. Well Discharge

Measure flow rates at each extraction well (and/or volumes of water extracted) as a function of time, using a meter/totalizer installed on the discharge pipe for each extraction well. The reading on the meter/totalizer shall be recorded at least quarterly and whenever water quality samples are collected from that well.

b. Treatment Plant Influent and Effluent / Treated Groundwater

Analyze treated water samples to verify attainment of treatment plant discharge ARARs and monitor operational parameters that are used as indicators of treatment facility performance or the need for maintenance. The Settling Defendants shall propose appropriate parameters and schedules for sampling of treated groundwater to ensure compliance with ARARs. After a period of initial monitoring, the Settling Defendants may propose criteria for subsequent reductions in sampling and/or analysis frequencies if the sampling results support such reductions.

c. Contaminant Mass Removal

Calculate the mass of individual contaminants removed from the aquifer by each extraction well each quarter, and cumulatively.

d. Air Emissions Monitoring

If applicable, perform air emission monitoring to verify that air emissions from treatment operations do not exceed ARARs.

e. Data Analysis and Reporting

Describe how the performance data will be analyzed, interpreted, and reported to evaluate compliance with ARARs. All data shall be submitted by the deadlines specified in an EPA approved schedule. Claims of change, difference, or trend in water quality or other parameters (e.g., between observed values and ARARs) shall include the use of appropriate statistical concepts and tests.

All analytical data, whether or not validated, shall be submitted to EPA within forty-five (45) calendar days of sample shipment to the laboratory. All analytical data, previously validated and in electronic format in an approved data structure, shall be submitted within seventy-five (75) calendar days of the sample shipment to the laboratory.

f. Split Sampling

Specify procedures for coordination of EPA collection of split or replicate samples.

2. Operation and Maintenance Manual

The Settling Defendants shall submit a draft Operation and Maintenance Manual in accordance with the schedule set forth in Section V of this SOW, and a revised draft after the final construction inspection to incorporate manufacturer / vendor information and any design modifications implemented during the Remedial Action. The Operation and Maintenance Manual must be reviewed and approved by EPA. The manual shall include all necessary Operation and Maintenance information for the operating personnel, and provide or address the following:

- a. System description;
- b. Startup and shutdown procedures;
- c. Description and schedule of normal operation and maintenance tasks, including equipment and material requirements, anticipated equipment replacement for significant components, availability of spare parts, provisions for remote monitoring and control, operator training and certification requirements, staffing needs, and related requirements;
- d. Indicators of system performance and/or maintenance (e.g., parameters to be monitored to determine timing for activated carbon or ion exchange resin replacement, or to assess biological reactor performance);
- e. Criteria to be used to determine whether the treated groundwater will be supplied to the primary or secondary user or use;
- f. Any planned variation in groundwater extraction rate, including whether each extraction well is to be operated at constant or variable flow rate, and a description of the magnitude and timing of any expected variation;
- g. Record keeping and reporting requirements, including operating and inspection logs, maintenance records, and periodic reports; and

h. Description and analysis of potential operating problems (e.g., equipment failure, higher than expected contaminant concentrations), including emergency operating and response activities and relevant health and safety information.

I. General Monitoring Plan

Monitoring activities for compliance, sentinel, monitoring, and extraction wells for the Remedial Action north of Puente Creek, including the Compliance monitoring, Westernmost Plume Area monitoring, and Mid-Valley monitoring shall be performed in accordance with the approved General Monitoring Plan. Monitoring of the treatment plant shall occur under the Operations and Maintenance Plan.

The Settling Defendants shall submit the General Monitoring Plan no later than the date specified in the schedule set forth in Section V of this SOW.

The General Monitoring Plan shall include a description of the types of data to be collected, sampling and data gathering methods, monitoring locations, sampling frequencies, and if appropriate, minimum monitoring duration for Compliance monitoring, Westernmost Plume Area monitoring, and Mid-Valley monitoring. The General Monitoring Plan shall be updated when modifications to the monitoring activities in any areas of the Remedial Action are made. The Compliance Monitoring, Mid-Valley Monitoring, and Westernmost Plume Area Monitoring Sections of the General Monitoring Plan shall include the following common components:

a. Data Collection Parameters

A description of the types of data to be collected, sampling and data gathering methods, monitoring locations, sampling frequencies, and if appropriate, minimum monitoring duration.

b. Split Sampling

Specify procedures for coordination of EPA collection of split or replicate samples.

c. Data Analysis and Reporting

Describe how the data will be analyzed, interpreted, and reported for Mid-Valley Monitoring, and to evaluate compliance with Performance Criteria, as applicable. All data shall be submitted by the deadlines specified in an EPA approved schedule. Claims of change, difference, or trend in water quality or other parameters (e.g., between observed values and ARARs) shall include the use of appropriate statistical concepts and tests.

All analytical data, whether or not validated, shall be submitted to EPA within forty-five (45) calendar days of sample shipment to the laboratory. All analytical data, previously validated and in electronic format in an approved data structure, shall be submitted within seventy-five (75) calendar days of the sample shipment to the laboratory. Well construction information shall be submitted at the completion of the initial sampling activities or within ninety (90) days after completion of a well, whichever is earlier.

d. Reporting Requirements

Provide a brief description of the contents and format for reporting, including requirements from the Compliance Monitoring Plan, Westernmost Plume Area Monitoring Plan, and the Mid-Valley Area Monitoring Plan as appropriate.

Prepare individual maps showing data and, for the mouth of the valley, isoconcentration contours for perchlorate, PCE, TCE, 1,4-dioxane, and 1,1-DCE contamination in the shallow zone. Assumptions made in averaging, excluding truncating, or otherwise selecting or manipulating the data to be used in preparing the contour maps shall be clearly stated.

1. Compliance Monitoring Section

Monitoring activities for extraction wells, compliance wells, sentinel wells and other monitoring wells shall be performed in accordance with the approved Compliance Monitoring Section as described in section IV.D and of this SOW, and the ESD.

2. Westernmost Plume Area Monitoring Section

Settling Defendants shall monitor the Westernmost Plume Area (see Figure 1 of this SOW) for 2 years to determine if lateral and vertical containment of the shallow zone plume is required. If, after two years of monitoring, EPA determines that containment is not necessary in the Westernmost Plume Area shallow zone, then the Settling Defendants shall continue monitoring to ensure that containment activities are not required until the eight-year anniversary of the Operational and Functional Date established pursuant to Paragraph 50 of the Decree. If EPA determines that containment of the Westernmost Plume Area of the shallow zone is required at any time after the two year monitoring period, then the Settling Defendants shall install the necessary extraction, compliance, sentinel and monitoring wells and treatment system to ensure that the Performance Criteria are met for the Westernmost Plume Area until the eight-year anniversary of the Operational and Functional Date established pursuant to Paragraph 50 of the Decree.

If after two years of monitoring, the Performance Criteria are not being met, then the Settling Defendants shall begin designing the extraction well(s), pipeline and treatment plant necessary to contain the Westernmost Plume Area shallow zone in order to meet the Performance Criteria. The Westernmost Plume Area Monitoring Section shall include (1) all planned activities and schedule for the initial 2 years of monitoring; (2) all planned activities and schedule for all monitoring for the remaining years until the eight-year anniversary of the Operational and Functional Date established pursuant to Paragraph 50 of the Decree; and (3) the plan and schedule for the design and implementation of a containment system, if necessary. If a containment system is necessary after 2 years of monitoring in order to meet the Performance Criteria, then the Settling Defendants shall submit a Remedial Design Work Plan with a schedule no later than thirty (30) days after EPA determines that the Westernmost Plume Area is migrating and must be contained to meet the Performance Criteria.

3. Mid-Valley Area Monitoring Section

Monitoring activities for monitoring wells in the Mid-Valley Area shall be performed in accordance with the approved Mid-Valley Area Monitoring Section as described in Section IV.E.3 of this SOW. The Mid-Valley Area Monitoring Section shall also describe how the data will be analyzed, interpreted, and reported to (1) determine if the intermediate zone contamination is migrating into the deep zone, and (2) define any upgradient contamination in the intermediate zone that may migrate towards the mouth of the valley.

J. Performance Evaluation Reports

The Performance Evaluation Report shall be due to EPA in accordance with the schedule set forth in Section V of this SOW, and shall include summaries of compliance monitoring activities and all groundwater data from the previous reporting periods (including summaries of the Quarterly Compliance Monitoring Reports discussed in Subsection K, below); updated water level contour maps showing measured water levels; field data to demonstrate hydraulic containment; interpreted water level contours; measured contaminant concentrations with contour maps; the interpreted extent of contamination; and appropriate groundwater modeling results required to demonstrate compliance with the Performance Criteria, including a detailed description and explanation of improvements made to the computer model of groundwater flow and contaminant migration in the preceding year and the resulting calibration; summaries of relevant operating and field data, including mass removal; any preliminary calculations and supporting data used to evaluate compliance; descriptions of the nature of, duration of, and response to any noncompliance or likelihood of noncompliance, in accordance with this SOW and the ESD; and any other requirements outlined in the General Monitoring Plan, Compliance Monitoring Plan, Westernmost Plume Area Monitoring Plan, and the Mid-Valley Monitoring Plan. The Performance Evaluation Report may be submitted in lieu of the fourth Quarterly Compliance Monitoring Report, so long as it contains all of the required information for the Quarterly Compliance Monitoring Reports.

Initially, at a minimum, individual contaminant contour maps shall be prepared indicating the extent of VOC and 1,4-dioxane contamination in the shallow zone at the mouth of the Puente Valley. Additional contour maps shall be prepared if requested by EPA to indicate the extent of contamination of additional contaminants. Assumptions made in averaging, excluding, truncating, or otherwise selecting or manipulating the data to be used in preparing the contour maps shall be clearly stated. Performance Evaluation Reports shall be provided as described in Section V of this SOW.

If the Performance Criteria or discharge ARARs are not met, or will more likely than not be exceeded, a detailed explanation of the next steps to be taken shall be provided, in accordance with Table 1 and/or 2 as applicable.

K. Quarterly Compliance Monitoring Reports

The Quarterly Compliance Monitoring Reports shall include: measured contaminant concentrations at compliance and sentinel wells; charts showing contaminant concentrations versus time at compliance and sentinel wells; assessments and statements regarding whether Performance Criteria have been exceeded at compliance wells; predictions, if appropriate, of whether future occurrences of noncompliance are more likely than not, and status of any efforts to bring a compliance well(s) back into compliance with the Performance Criteria; relevant preliminary calculations and supporting data used to evaluate compliance; treatment plant effluent discharge monitoring results and results of any other sampling necessary to demonstrate compliance with ARARs; assessments and statements regarding whether the ARARs, including discharge ARARs, have been exceeded; predictions, if appropriate, of possible future exceedances of ARARs, including discharge ARARs, and status of any efforts to come back into compliance with ARARs; and any other relevant requirements outlined in the General Monitoring Plan, Compliance Monitoring Plan, Westernmost Plume Area Monitoring Plan, and the Mid-Valley Monitoring Plan.

Quarterly Compliance Monitoring Reports shall be due every three months, as described in Section V of this SOW. The Performance Evaluation Report may include and be submitted in lieu of the fourth Quarterly Compliance Monitoring Report, so long as it contains all of the required information.

L. Supporting Plans

1. Sampling and Analysis Plan and Health and Safety Plan

Sampling and Analysis Plan. In accordance with Sections VI and VIII of the Decree, the Settling Defendants shall prepare a Sampling and Analysis Plan (SAP), or update an existing Plan to perform compliance monitoring and carry out any other field investigations needed to complete the Remedial Design, and construct and operate the Remedial Action. The Plan shall discuss the timing of data collection activities, including data collection activities needed to establish baseline conditions before startup of the Remedial Action.

The SAP shall include a Field Sampling and Analysis Plan (FSAP), a Quality Assurance Project Plan (QAPP), and a schedule for implementation of investigation, sampling, analysis, and reporting activities. The FSAP and QAPP may be submitted as one document or separately, and may reference an existing FSAP or QAPP. Upon EPA approval, the Settling Defendants shall proceed to implement the sampling activities described in the SAP.

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a. The FSAP shall describe sampling objectives, analytical parameters, sample locations and frequencies, sampling equipment and procedures, sample handling and analysis, management of investigation-derived wastes, and planned uses of the data. The FSAP shall be consistent with "EPA Requirements for Quality Assurance Project Plans for Environmental Data Operations" (EPA/240/B-01/003, March 2001), and "Guidance for the Data Quality Objectives Process" (EPA/600/R-98/018, February 1998), Document Control No. 9QA-06-89, April 1990, and other applicable guidance. It shall be written so that a field sampling team unfamiliar with the project would be able to gather the samples and field information required. The FSAP shall include a schedule that describes activities that must be completed in advance of sampling, including acquisition of property, access agreements, and arrangements for disposal of investigation-derived waste.

b. The QAPP shall describe project objectives, organizational and functional activities, data quality objectives (DQOs), and quality assurance and quality control (QA/QC) protocols that shall be used to achieve the desired DQOs. The QAPP shall be consistent with "EPA Requirements for Quality Assurance Project Plans for Environmental Data Operations" (EPA QA/R-5, November 1999), and "Guidance for the Data Quality Objectives Process" (EPA QA/G-4, September 1994) and other applicable guidance (see list of references). The DQOs shall, at a minimum, reflect use of analytical methods for obtaining data of sufficient quality to meet National Contingency Plan requirements as identified at 40 CFR 300.435(b) and 300.430(b)(8). In addition, the QAPP shall address personnel qualifications, laboratory qualification, sampling procedures, sample custody, analytical procedures, document control procedures, preservation of records (see Section XXVI of the Decree), data reduction, data validation, data management, procedures that will be used to enter, store, correct, manipulate, and analyze data; protocols for transferring data to EPA in electronic format; and document management.

The Settling Defendants shall demonstrate in advance and to EPA's satisfaction that each laboratory it may use is qualified to conduct the proposed work and meets the requirements specified in Section VIII of the Decree. EPA may require that the Settling Defendants submit detailed information to demonstrate that the laboratory is qualified to conduct the work, including information on personnel qualifications, equipment and material specification, and laboratory analyses of performance samples (blank and/or spike samples). In addition, EPA may require

submittal of data packages equivalent to those generated by the EPA Contract Laboratory Program (CLP).

Health and Safety Plan. To ensure protection of on-site personnel and area residents from hazards posed by sampling activities, the Settling Defendants shall also develop a Health and Safety Plan (or update an existing Plan). The Plan shall be in conformance with U.S. Occupational, Safety, and Health Administration (OSHA) requirements as outlined in 29 C.F.R. §§1910 and 1926; and any other applicable requirements. The Health and Safety Plan shall describe health and safety risks, employee training, monitoring and personal protective equipment, medical monitoring, levels of protection, safe work practices and safeguards, contingency and emergency planning, and provisions for site control. EPA will review but will neither approve nor disapprove the Settling Defendants' Health and Safety Plan.

2. Construction Quality Assurance Plan

The Settling Defendants shall develop and implement a Construction Quality Assurance Plan to ensure, with a reasonable degree of certainty, that the completed Remedial Action will meet or exceed all design criteria, plans and specifications, and Performance Standards. The Construction Quality Assurance Plan shall include the following elements:

- a. Responsibilities and authorities of all organizations and key personnel involved in the design and construction of the Remedial Action;
- b. A description of the quality control organization, including a chart showing lines of authority, members of the Quality Assurance team, their responsibilities and qualifications, and acknowledgment that the Quality Assurance team will implement the quality control system for all aspects of the work specified and shall report to the Performing Settling Defendants' Project Coordinator and EPA. Members of the Quality Assurance team shall have a good professional and ethical reputation, previous experience in the type of QA/QC activities to be implemented, and demonstrated capability to perform the required activities. They shall also be independent of the construction contractor;
- c. Description of the observations, inspections, and control testing that will be used to assure quality workmanship, verify compliance with the plans and specifications, or meet other QC objectives during implementation of the Remedial Action. This includes identification of sample size, sample locations, and sample collection or testing frequency; and acceptance and rejection criteria. The Plan shall specify laboratories to be used, and include information which certifies that personnel and laboratories performing the tests are qualified and the equipment and procedures to be used comply with applicable standards;

d. Reporting procedures, frequency, and format for QA/QC activities. This shall include such items as daily summary reports, inspection data sheets, problem identification and corrective measures reports, design acceptance reports, and final documentation. Provisions for the final storage of all records shall be presented in the Construction Quality Assurance Plan. The QA official shall report simultaneously to the Settling Defendants' representative and to EPA; and

e. A list of definable features of the work to be performed. A definable feature of work is a task which is separate and distinct from other tasks and has separate quality control requirements.

3. Construction Health and Safety Plan

The Settling Defendants shall prepare a Construction Health and Safety Plan in compliance with OSHA regulations and protocols and other applicable requirements. The Construction Health and Safety Plan shall describe health and safety risks, employee training, monitoring and personal protective equipment, medical monitoring, individuals responsible in an emergency, and provisions for site control for workers and for visitors to the job site. EPA will review but neither approve nor disapprove the Settling Defendants' Construction Health and Safety Plan.

M. Certification of Completion Inspection and Report

No later than 90 days before, and no sooner than 120 days prior to, the eight-year anniversary of the Operational and Functional Date, and upon Settling Defendants concluding that the Remedial Action is still Operational and Functional, Settling Defendants shall schedule a pre-certification inspection to be attended by Settling Defendants and EPA.

The Settling Defendants shall submit a Certification of Completion Report prepared by a registered Professional Engineer that includes a Facility Status Package to EPA for review. The Report shall state that all phases of the Remedial Action are Operational and Functional. The Report shall include, but not be limited to, all maintenance reports, performance reports, sampling results, and all other deliverables updated as appropriate to reflect the performance and condition of the containment and Mid-Valley Monitoring systems including all wells, pipelines, and treatment facilities. The Report shall also provide copies of all easements, access agreements, or other documents that will provide EPA, the State, and their authorized representatives (including PRPs performing work at the Site) access to all wells, pipelines, and treatment facilities after EPA's Operational and Functional determination pursuant to Paragraph 50 of the Decree. If EPA determines that the system needs repairs, and/or additional documentation regarding access, the Settling Defendants shall perform the necessary work and/or provide the necessary documentation before EPA will approve the Final Certification of Completion Report. EPA approval of the Final Certification of Completion Report for the entire Remedial Action also serves as the certification that the entire Remedial Action is complete. The written report shall also provide a synopsis of the work defined in this SOW, describe

deviations from the RD and RA Work Plans, provide actual costs of the Remedial Action (and Operation and Maintenance), and provide a summary of the results of operational and performance monitoring completed. The report shall contain the following statement, signed by a responsible corporate official of the Settling Defendants or the Settling Defendants' Project Coordinator:

"To the best of my knowledge, after thorough investigation, I certify that the information contained in or accompanying this submission is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

V Schedule for Major Deliverables and Other Tasks

| ACTIVITY | DUE DATE |
|--|--|
| PLANNING DOCUMENTS | |
| Project Coordinators | Within twenty (20) days of lodging the Decree, Settling Defendants and EPA will notify each other, in writing, of the name, address and telephone number of their respective designated Project Coordinators and Alternate Project Coordinators. |
| Compliance and Sentinel Well Network Plan | Sixty (60) days after the Extraction Well Completion Report is approved by EPA. If necessary, revised plan due twenty-one (21) days after receipt of EPA comments |
| RD Work Plan | To be submitted with Consent Decree |
| Updated RD Work Plan for Potential Westernmost Plume Area Extraction | Thirty (30) days after EPA determines the Westernmost Plume Area is migrating and must be contained to meet Performance Criteria. |

| ACTIVITY | DUE DATE |
|--|---|
| General Monitoring Plan | <p>Thirty (30) days after submittal of the Compliance and Sentinel Well Completion Report</p> <p>If necessary, revised plan due twenty-one (21) days after receipt of EPA comments</p> <p>Updated General Monitoring Plan when modifications to monitoring activities are made.</p> |
| Extraction Well Installation and Testing Work Plan | Included in the RD Work Plan, attached to the Consent Decree |
| Mid-Valley Area Well Installation Work Plan | Included in the RD Work Plan, attached to the Consent Decree |
| Westernmost Plume Area Monitoring Well Installation Work Plan | Included in the RD Work Plan, attached to the Consent Decree |
| Operations and Maintenance Plan | <p>Thirty (30) days after the approval of Remedial Action Work Plan</p> <p>If necessary, revised O&M Plan due twenty-one (21) days after receipt of EPA comments</p> |
| Notification of the Name, Title, and Qualifications of Possible Construction Contractor(s) | <p>Forty-five (45) days after EPA approval of Final Design</p> <p>If necessary, revised notice due twenty-one (21) days after receipt of EPA comments</p> |

| ACTIVITY | DUE DATE |
|--|--|
| REMEDIAL DESIGN | |
| Notification of Supervising Contractor (as required by Section VI of the Decree) | <p>Within ten (10) days after lodging the Decree</p> <p>If EPA disapproves a proposed Supervising Contractor, EPA will notify Settling Defendants in writing, and they shall follow procedures set forth in Paragraph 9 of the Decree.</p> |
| Conceptual Remedial Design Submittal | Conceptual Remedial Design will be attached to the Consent Decree |
| Preliminary Remedial Design Submittal | Sixty (60) days after EPA approval of the Extraction Well Completion Report, if not already submitted to EPA prior to this date |
| Prefinal Remedial Design Submittal | Sixty (60) days after EPA approval of Preliminary Remedial Design Submittal |
| Final Design Submittal (if needed) | <p>Thirty (30) days after receipt of EPA comments on Prefinal Design Submittal</p> <p>If needed, revised Report due twenty-one (21) days after receipt of EPA comments</p> |

| ACTIVITY | DUE DATE |
|--|--|
| REMEDIAL ACTION | |
| RA Work Plan | Sixty (60) days after EPA approval of Final Design If needed, revised Report due twenty-one (21) days after receipt of EPA comments |
| Notification of Selected Construction Contractor (if applicable) | Within five (5) days of selection |
| Pre-Construction Meeting and Construction Schedule with projections for "Operational and Functional" | 180 days after EPA approval of the Remedial Action Work Plan |
| Complete Construction, and Satisfy "Operational and Functional" Criteria | Per EPA-Approved Construction Schedule |
| Initiate Construction | Fourteen (14) days after Pre-Construction Meeting |

| ACTIVITY | DUE DATE |
|--|--|
| Prefinal Construction Inspection(s) | Within fourteen (14) days after the Settling Defendants believe that construction is complete and the Remedial Action, or a discrete phase of the Remedial Action, is Operational and Functional, the Settling Defendants shall notify the U.S. EPA for the purpose of conducting a Prefinal Construction Inspection |
| Prefinal Construction Inspection Report(s) | Seven (7) days after Prefinal Construction Inspection(s) The Prefinal Construction Inspection Reports include the Extraction Well Completion Report, Mid-Valley Monitoring Well Completion Report, and Westernmost Plume Area Monitoring Well Completion Report |
| Final Construction Inspection(s) | Within fourteen (14) days after completion of any work identified in the Prefinal Construction Inspection Report(s), the Settling Defendants shall notify the U.S. EPA for the purpose of conducting a Final Inspection(s) |
| Final Construction Inspection Report(s) | Seven (7) days after Final Construction Inspection(s) |
| Begin Continuous Operation of Remedial Action System | Fourteen (14) days after Final Construction Inspection Report is approved by EPA |
| Remedial Action Construction Complete Report | Draft due sixty (60) days after Final Construction Inspection(s) If needed, revised Report due twenty-one (21) days after receipt of EPA comments |

| ACTIVITY | DUE DATE |
|---|---|
| OPERATION AND MAINTENANCE | |
| Operation and Maintenance Manual | <p>Draft shall be submitted as part of the Prefinal Construction Inspection of the first portion of the treatment plant to be completed and inspected</p> <p>If requested by EPA, revised Manual due twenty-one (21) days after receipt of EPA comments</p> <p>Updated Manual due fourteen (14) days after Final Construction Inspection to incorporate any design modifications made during the Remedial Action construction and shakedown</p> <p>If requested by EPA, revised updated Manual due twenty-one (21) days after receipt of EPA comments</p> |
| PERFORMANCE EVALUATION | |
| Quarterly Compliance Monitoring Reports | Due April 30 (January - March activities), July 31 (April - June activities), and October 31 (July - September activities), of each year beginning with the end of the first quarter after EPA approval of Final Construction Inspection Report |
| Performance Evaluation Reports | Due January 31 of each year in lieu of fourth Quarterly Compliance Monitoring Reports. |
| Noncompliance Notification | Due seven (7) days after (1) receipt of information indicating noncompliance with Performance Criteria or an exceedance of discharge ARARs, or (2) a determination that it is more likely than not that the Performance Criteria or discharge ARARs will be exceeded. Procedures outlined in Table 1 or 2 as applicable shall be followed. |
| Compliance/Response Action Plan | Draft due fourteen (14) days after receipt of information indicating noncompliance with Performance Criteria or discharge ARARs, or a determination that it is more likely than not that the Performance Criteria or discharge ARARs will be exceeded. Procedures outlined in Table 1 or 2 as applicable shall be followed. |

| ACTIVITY | DUE DATE |
|---|--|
| Compliance Correction Report | As established in the approved Compliance Action Plan. Procedures outlined in Table 1 or 2 as applicable shall be followed. |
| Compliance and Sentinel Well Installation Complete Report | Thirty (30) days after completion of work performed under the approved Compliance and Sentinel Network Plan If necessary, revised plan due twenty-one (21) days after receipt of EPA comments |
| SUPPORTING PLANS | |
| Sampling and Analysis Plan | Included in the RD Work Plan, attached to the Consent Decree |
| Site Health and Safety Plan | Included in the RD Work Plan, attached to the Consent Decree |
| Construction Quality Assurance Plan | Shall be submitted as a part of the Prefinal Remedial Design If necessary, revised plan due twenty-one (21) Days after receipt of EPA comments |
| Construction Health and Safety Plan | Shall be submitted as a part of the Remedial Action Work Plan If necessary, revised plan due twenty-one (21) Days after receipt of EPA comments |
| CERTIFICATIONS REQUIRED BY SECTION XIV OF THE DECREE | |
| Pre-Certification Inspection for reaching Operational and Functional Date | Thirty (30) days after the Settling Defendants concludes that all construction and shakedown work has been performed, and the Settling Defendants believe the entire Remedial Action is Operational and Functional |

| ACTIVITY | DUE DATE |
|---|--|
| Draft Pre-Certification Report Indicating that the entire Remedial Action is Operational and Functional | <p>Thirty (30) days after Pre-Certification Inspection</p> <p>Thirty (30) days for EPA review. If EPA determines that the entire Remedial Action is not Operational and Function, EPA will inform the Settling Defendants of the necessary activities that must be undertaken in order for the entire Remedial Action to be Operational and Functional.</p> |
| Final Pre-Certification Report Indicating that the entire Remedial Action is Operational and Functional | <p>Thirty (30) days after Settling Defendants conducts any additional activities necessary in order for the entire Remedial Action to be Operational and Functional.</p> <p>Upon EPA approval of the Final Pre-Certification Report for the final phase of the Remedial Action, the entire Remedial Action will be certified as Operational and Functional, pursuant to Paragraph 50 of the Decree.</p> |
| Certification of Completion Inspection | No later than ninety (90) days before, and no sooner than 120 days prior to, the eight-year anniversary of the Operational and Functional Date, and upon Settling Defendants concluding that the Remedial Action is still Operational and Functional, Settling Defendants shall schedule a pre-certification inspection to be attended by Settling Defendants and EPA. |
| Prefinal Certification of Completion Report | <p>Thirty (30) days after Certification of Completion Inspection</p> <p>In accordance with Paragraph 51 of the Decree and this SOW, the Settling Defendants shall submit a Certification of Completion Report that includes a Facility Status Package to EPA for review. If EPA determines that the system needs repairs, the Settling Defendants shall perform the necessary work before EPA will approve the Final Certification of Completion Report.</p> |
| Final Certification of Completion Report | <p>Thirty (30) days after EPA Review of the Certification of Completion Report, the Settling Defendants shall submit a Final Certification of Completion Report indicating the activities completed</p> <p>Upon EPA approval of the Final Certification of Completion Report, the Remedial Action shall be certified as complete.</p> |

VI References

The following list, although not comprehensive, provides citations for many of the regulations and guidance documents that apply to the RD/RA process. Settling Defendants shall review these guidance documents and shall use the information provided therein in performing the RD/RA and preparing all deliverables under this SOW.

"Closeout Procedures for National Priority List Sites," U.S. EPA, OSWER Directive No. 9320.2-09AP, January 2000.

"EPA NEIC Policies and Procedures Manual," U.S. EPA, May 1978, revised May 1986.

"EPA Requirements for Quality Assurance Project Plans for Environmental Data Operations," May 1994, U.S. EPA, (EPA QA/R-5).

"Guidance for the Data Quality Objectives Process" U.S. EPA, (EPA QA/G-4).

"Guidance for Quality Assurance Project Plans," February 1998, U.S. EPA, (EPA QA/G-5).

"Guidance on Remedial Actions for Contaminated Ground Water at Superfund Sites," U.S. EPA, Office of Emergency and Remedial Response, (Draft), OSWER Directive No. 9283.1-2.

"Interim Final Guidance on Oversight of Remedial Designs and Remedial Actions Performed by Potentially Responsible Parties," U.S. EPA, Office of Emergency and Remedial Response, February 14, 1990, OSWER Directive No. 9355.5-01.

"Methods for Monitoring Pump-and-Treat Performance," U.S. EPA, Office of Research and Development, June 1994 (EPA 600/R-94/123).

"National Oil and Hazardous Substances Pollution Contingency Plan, Final Rule," 40 C.F.R. Part 300

"Preparation of a USEPA Region 9 Field Sampling Plan for Private and State-Lead Superfund Projects," April 1990, U.S. EPA, (No. 9QA-06-89).

"Superfund Remedial Design/ Remedial Action Handbook," U.S. EPA, Office of Emergency and Remedial Response, June 1995 (EPA 540/R-95/059)

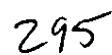
FIGURE 1: Map of the Site

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FIGURE 2: Map of the Mouth of the PVOU Showing Proposed Extraction Well Locations

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Appendix E to Consent Decree

United States v. Carrier Corp. (C.D. Cal.)

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SEP Implementation Plan

**WOODLAND DUCK FARM
SEP IMPLEMENTATION PLAN
PUENTE VALLEY OPERABLE UNIT
SAN GABRIEL VALLEY SUPERFUND SITE, AREA 4**

CEQA/NEPA

I. Overview

The Woodland Duck Farm Supplemental Environmental Project (the "SEP") will be part of the overall redevelopment of the Woodland Duck Farm property (the "Duck Farm Project"). The Duck Farm property is located in the City of Industry and in unincorporated Los Angeles County. The Watershed Conservation Authority (WCA) is a joint powers authority of San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy (RMC) and the Los Angeles County Flood Control District. The WCA's mission is to provide for a comprehensive program to expand and improve open space opportunities for the conservation, restoration, and environmental enhancement of the San Gabriel and Lower Los Angeles Rivers Watershed area consistent with the goals of flood protection, water supply, groundwater recharge and water conservation. Carrier/UTC has agreed to spend not less than \$468,750 in Eligible SEP Costs to implement the SEP.

The 57-acre Woodland Duck Farm property grants a unique opportunity to provide a much needed open space area in an increasingly urbanized portion of the San Gabriel Valley. The property is located along the east side of the San Gabriel River just north of the confluence of the San Gabriel River and San Jose Creek. The western portion of the property had been operated as a Duck Farm for approximately 50 years until its closure in 2001. The property, located between the 10 and the 60 Freeways, consists of two sections: 45-acres along the east bank of the San Gabriel River and 12-acres on the eastern side of the 605 freeway.

The Duck Farm Project has the potential to incorporate design elements such as groundwater recharge, water quality improvements, flood management, native habitat enhancement, as well as interpretive educational signage, exhibits, and displays. The project goal is to create a model for sustainable, multi-benefit watershed projects that address the open space and watershed needs of the San Gabriel Valley. By connecting the surrounding communities to the San Gabriel River, the Duck Farm Project will establish local and regional connectivity to other sustainable open space watershed projects and will contribute to a network of open space throughout the San Gabriel River Watershed.

In December 2004, the Duck Farm was acquired by the WCA from its interim steward, the Trust for Public Land (TPL). The SEP will focus on one or more selected restoration activities, as further described below, as part of the overall Duck Farm Project, consistent with paragraph 62 of the Consent Decree. Activity under the SEP cannot commence until the Master Site Redevelopment Plan is completed for the overall Duck Farm Project. The WCA is currently preparing a Request for Proposal to prepare the Master Site Redevelopment Plan. This planning activity will be conducted pursuant to the requirements of CEQA/NEPA and will involve identification of the areas of the property that are appropriate for phytoremediation.

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II. Phytoremediation

Removal of contaminants by phytoremediation is expected to be the primary focus of the SEP and this SEP Implementation Plan. The phytoremediation process has been used successfully on a range of contaminants. A variety of plants can be used for this purpose ranging from grasses to trees. Use of phytoremediation for the purpose of extracting contaminants will be explored in the planning process with the goal of incorporating this process into the landscape of the Duck Farm Project, particularly to address elevated lead and nitrogen levels in certain soils on the property. Phytoremediation is analogous to other forms of environmental remediation in that it includes assessment, a work program, monitoring, and disposal. An estimated cost-breakdown of the phytoremediation to be conducted under the SEP is set forth below, with all costs listed per acre. Actual costs will be documented on a time and materials basis. It is anticipated that up to 20 acres of the Duck Farm property will be appropriate for phytoremediation. Based on the estimated costs shown below, the approximate total acreage of phytoremediation to be funded through the SEP is 16.8 acres.

| | <u>Task</u> | <u>Est. Cost</u> | <u>Description</u> |
|-----|-------------|--|--------------------|
| 1-2 | 5,300.00 | Predesign and Design – As-Built plans | |
| 3 | 1,300.00 | Site Preparation and Weed Removal | |
| 4 | 5,000.00 | Soil Cover and Amendments | |
| 5 | 5,500.00 | Tree Planting and Seeding | |
| 6 | 5,000.00 | Irrigation System | |
| 7 | 700.00 | Daily Monitoring and Monthly Reporting during planting | |
| 8 | 2,000.00 | 120-day maintenance | |
| 9 | 1,200.00 | Erosion Control, Barrier Placement, Tree Protection | |
| 10 | 500.00 | Maintenance Monitoring Reports | |
| 11 | 1,400.00 | Contractor Oversight | |

TOTAL \$27,900.00 per acre

Task 1, Predesign, and Task 2, Design. Soil characterization occurred prior to transfer of the property from TPL to WCA, but the appropriate phytoremediation methodology for this project (plant species, etc.) must be identified, as well as other elements such as: irrigation design, required soil composition, and plant placement.

Task 3, Site Preparation and Weed Removal. These tasks are required to prepare the identified area for planting by removal of inappropriate vegetation and demolition of debris or other barriers to growth of the selected plantings.

Task 4, Soil Cover and Amendments. This will consist of mulch and soil additives (fertilizers) required to establish a suitable growth environment for the selected plantings.

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Task 5, Tree Planting and Seeding. The unit cost includes both material and labor.

Task 6, Irrigation System. The unit cost includes both material and labor.

Task 7, Daily Monitoring and Monthly Reporting. During planting, this is required to monitor the successful establishment of the plantings and effective functioning of the irrigation system and erosion control barriers.

Task 8, 120-day Maintenance. This is the estimated cost of labor to maintain the planting through its crucial initial stage.

Task 9, Erosion Control, Barrier Placement, Tree Protection. The unit cost includes both labor and materials to perform the necessary work to protect the plantings from predators and humans, as well as to prevent inappropriate soil erosion into the nearby impacted water body, the San Gabriel River.

Task 10, Maintenance Monitoring Reports. This is to cover the preparation of report material to document the progress of the establishment of the plantings.

Task 11, Contractor Oversight. This will be performed by TPL and will be limited to not more than 5% of the Eligible SEP Costs, per the Consent Decree.

III. Schedule

- Provide reports as required by Paragraph 31 of the Consent Decree
- Initiate SEP within three years of entry of the Consent Decree
- Complete SEP within five years of entry of the Consent Decree

IV. Additional SEP Activities

The construction of several **groundwater recharge facilities** at the property is a priority for the Los Angeles County Flood Control District, and is included in this SEP Implementation Plan as a permissible SEP activity. Such facilities could take the form of either highly engineered, un-vegetated declivities, fenced off from the public; or, alternately, basins that are vegetated with native plants which have recreation trails for the public. This latter alternative provides for multiple benefits. The estimated cost for the engineered version, referred to as "Retention Facility" below, is \$3,200,000 total for a series of small basins with a total recharge capacity of 150 acre-feet. The estimated cost for the multiple-use version, referred to as "Recharge Facility" below, is \$3,800,000 total for a series of small basins with a total recharge capacity of 60 acre-feet.

Treatment Wetlands are another permissible SEP activity. Run-off from the built environment is a major source of pollution of the San Gabriel Valley water supply and it is recognized that,

where the opportunity occurs, facilities should be established to treat run off before it can reach the groundwater or the ocean. Treatment Wetlands have proven to be very effective in the removal of contaminants and when combined with landscape elements such as riparian terraces, considerable reduction of common pollutants can be achieved. Due to its proximity to the San Gabriel River, the Duck Farm provides an ideal location to conduct such treatment of run off. The total cost of treatment wetlands at the property is estimated at \$1,200,000-\$2,400,000.

Projects that have incorporated treatment wetlands, groundwater recharge, and phytoremediation have proven to be successful at meeting the needs of contaminant removal and water retention while at the same time providing a safe, low impact area that serves the open space needs of the surrounding community.

V. Cost Matrix for SEP Activities

| SEP Activities | Cost | Units | No. of Units for Site | Total Cost |
|---------------------------|--------------------|--------------|------------------------------------|-------------------------|
| Phytoremediation | \$27,900 | acre | 10-20 | \$279,000 - \$558,000 |
| Retention Facility | \$3.2 million | 150 acre ft | 1 (made of several smaller basins) | \$3,200,000 |
| Recharge Facility | \$3.8 million | 60 acre ft | 1 (made of several smaller basins) | \$3,800,000 |
| Treatment Wetland | \$80,000-\$120,000 | acre | 15-20 | \$1,200,000-\$2,400,000 |



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Appendix F to Consent Decree

United States v. Carrier Corp. (C.D. Cal.)

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DRAFT EASEMENT

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**ENVIRONMENTAL PROTECTION EASEMENT
AND
DECLARATION OF RESTRICTIVE COVENANTS**

1. This Environmental Protection Easement and Declaration of Restrictive Covenants is made this ____ day of _____, 20____, by and between _____, ("Grantor"), having an address of _____, and _____ ("Grantee").

WITNESSETH:

2. WHEREAS, Grantor is the owner of a parcel [or easement, etc.] of land located in the county of Los Angeles, State of California, more particularly described on Exhibit A attached hereto and made a part hereof (the "Property"); and

3. WHEREAS, the Property is part of the Puente Valley Operable Unit of the San Gabriel Valley Superfund Site, Area 4 ("Site"), which the U.S. Environmental Protection Agency ("EPA"), pursuant to Section 105 of the Comprehensive Environmental Response, Compensation and Liability Act ("CERCLA"), 42 U.S.C. § 9605, placed on the National Priorities List, set forth at 40 C.F.R. Part 300, Appendix B, by publication in the Federal Register on May 8, 1984; and

4. WHEREAS, an Interim Record of Decision was issued in September of 1998 (the "Interim ROD"); and

5. WHEREAS, in _____ of 2005 the Interim ROD was modified by the Explanation of Significant Differences (the "ESD");

6. WHEREAS the Interim ROD, as modified by the ESD, provides, in part, for the following response actions:

a) the prevention of groundwater in the shallow zone at the mouth of Puente Valley with contamination greater than or equal to ten-times the levels listed in Table 2 of Attachment 1 of the ESD from:

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- (1) migrating beyond its lateral extent as measured at the time the shallow zone Remedial Action containment system is Operational and Functional; and
- (2) migrating vertically into the intermediate zone; and

b) Mid-Valley Monitoring.

7. WHEREAS any final ROD for the Site may require then existing systems to continue to operate.

8. WHEREAS, the Parties hereto have agreed 1) to grant a permanent right of access over the Property to Grantee, EPA, DTSC and their authorized representatives, including any potentially responsible parties (PRPs) performing response actions pursuant to an administrative order or consent decree with the United States for purposes of implementing, facilitating and performing response actions at the Site ; and

9. WHEREAS, Grantor wishes to cooperate fully with the EPA in the implementation of all response actions at the Site;

NOW, THEREFORE:

10. Grant: Grantor, on behalf of itself, its successors and assigns, in consideration of the terms of the Consent Decree in the case of United States v. Carrier Corp., Civil Action No. _____, does hereby covenant and declare that the Property shall be subject to the restrictions on use set forth below, and does give, grant and convey to the Grantee, and its assigns, with general warranties of title, the perpetual right to enforce said use restrictions, and an environmental protection easement of the nature and character, and for the purposes hereinafter set forth, with respect to the Property.

11. Purpose: It is the purpose of this instrument to convey to the Grantee real property rights, which will run with the land, to facilitate the performance of response actions at the Site.

12. Restrictions on use: The following covenants, conditions, and restrictions apply to the use of the Property, run with the land and are binding on the Grantor:

use of the Property shall not in any way interfere with the operation and/or maintenance of response actions taken at the Site, including, but not limited to, any equipment or infrastructure constructed or used for the response actions.

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13. Modification of restrictions: The above restrictions may be modified, or terminated in whole or in part, in writing, by the Grantee and EPA. If requested by the Grantor, such writing will be executed by Grantee in recordable form.

14. Environmental Protection Easement: Grantor hereby grants to the Grantee, EPA and DTSC, and their authorized representatives, including any PRPs performing response actions pursuant to an administrative order or consent decree with the United States an irrevocable, permanent and continuing right of access at all reasonable times to the Property for purposes of:

- a) Facilitating implementation by EPA and its designees of the Remedial Actions in the Interim ROD, as modified by the ESD, and any future ESDs, ROD Amendments, or the final ROD, including but not limited to construction, erection, operation, maintenance and monitoring of [as applicable, a treatment plant, monitoring wells, and/or pipelines, etc.]
- b) Verifying that no action is being taken on the Property in violation of the terms of this instrument, the Interim ROD, as modified by the ESD, and any future ESDs, ROD Amendments, the final ROD, or of any federal or state environmental laws or regulations;
- c) Monitoring response actions on the Site and conducting investigations relating to contamination on or near the Site, including, without limitation, sampling of air, water, sediments, soils, and specifically, without limitation, obtaining split or duplicate samples;
- d) Conducting periodic reviews of the remedial action, including but not limited to, reviews required by applicable statutes and/or regulations; and
- e) Implementing additional or new response actions if EPA in its sole discretion, determines i) that such actions are necessary to protect the environment because either the original remedial action has proven to be ineffective or because new technology has been developed which will

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accomplish the purposes of the remedial action in a significantly more efficient or cost effective manner; and, ii) that the additional or new response actions will not impose any significantly greater burden on the Property or unduly interfere with the then existing uses of the Property.

15. Reserved rights of Grantor: Grantor hereby reserves unto itself, its successors, and assigns, all rights and privileges in and to the use of the Property which are not incompatible with the restrictions, rights and easements granted herein.

16. Nothing in this document shall limit or otherwise affect EPA's rights of entry and access or EPA's authority to take response actions under CERCLA, the National Contingency Plan ("NCP"), or other federal law.

17. No Public Access and Use: No right of access or use by the general public to any portion of the Property is conveyed by this instrument.

18. Notice Requirement: Grantor agrees to include in any instrument conveying any interest in any portion of the Property, including but not limited to deeds, leases and mortgages, a notice which is in substantially the following form:

**NOTICE: THE INTEREST CONVEYED HEREBY
IS SUBJECT TO AN ENVIRONMENTAL
PROTECTION EASEMENT AND DECLARATION
OF RESTRICTIVE COVENANTS, DATED
_____, 20____, RECORDED IN THE PUBLIC
LAND RECORDS ON _____, 20____, IN
BOOK _____, PAGE _____, IN FAVOR OF _____
_____ [Grantee], AND ENFORCEABLE
BY _____ [Grantee], AND THE
UNITED STATES OF AMERICA.**

Within thirty (30) days of the date any such instrument of conveyance is executed, Grantor must provide Grantee with a certified true copy of said instrument and, if it has been recorded in the public land records, its recording reference.

19. Administrative Jurisdiction: The federal agency having administrative jurisdiction over the interests acquired by the United States by this instrument is the EPA.

20. Enforcement: The Grantee and EPA shall be entitled to enforce the terms of this instrument by resort to specific performance or legal process. All remedies available hereunder shall be in addition to any and all other remedies at law or in equity, including CERCLA. Enforcement of the terms of this instrument shall be at the discretion of the Grantee and EPA, and any forbearance, delay or omission to exercise its rights under this instrument in the event of a breach of any term of this instrument shall not be deemed to be a waiver by the Grantee or EPA of such term or of any subsequent breach of the same or any other term, or of any of the rights of the Grantee or EPA under this instrument.

21. Damages: Grantee shall be entitled to recover damages for violations of the terms of this instrument, or for any injury to the remedial action, to the public or to the environment protected by this instrument.

22. Waiver of Certain Defenses: Grantor hereby waives any defense of laches, estoppel, or prescription.

23. Covenants: Grantor hereby covenants to and with the Grantee and the United States and its assigns, that the Grantor is lawfully seized in fee simple of the Property, that the Grantor has a good and lawful right and power to sell and convey it or any interest therein, that the Property is free and clear of encumbrances, except those noted on Exhibit B attached hereto, and that the Grantor will forever warrant and defend the title thereto and the quiet possession thereof.

24. Notices: Any notice, demand, request, consent, approval, or communication that either party desires or is required to give to the other shall be in writing and shall either be served personally or sent by first class mail, postage prepaid, addressed as follows:

To Grantor:

To Grantee:

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To EPA:

Penelope McDaniel
EPA Project Manager
United States Environmental Protection Agency
Region 9
75 Hawthorne Street
San Francisco, CA 94105

25. General provisions:

a) Controlling law: The interpretation and performance of this instrument shall be governed by the laws of the United States or, if there are no applicable federal laws, by the law of the State of California.

b) Liberal construction: Any general rule of construction to the contrary notwithstanding, this instrument shall be liberally construed in favor of the grant to effect the purpose of this instrument and the policy and purpose of CERCLA. If any provision of this instrument is found to be ambiguous, an interpretation consistent with the purpose of this instrument that would render the provision valid shall be favored over any interpretation that would render it invalid.

c) Severability: If any provision of this instrument, or the application of it to any person or circumstance, is found to be invalid, the remainder of the provisions of this instrument, or the application of such provisions to persons or circumstances other than those to which it is found to be invalid, as the case may be, shall not be affected thereby.

d) Entire Agreement: This instrument sets forth the entire agreement of the Parties with respect to rights and restrictions created hereby, and

supersedes all prior discussions, negotiations, understandings, or agreements relating thereto, all of which are merged herein.

e) No Forfeiture: Nothing contained herein will result in a forfeiture or reversion of Grantor's title in any respect.

f) Joint Obligation: If there are two or more parties identified as Grantor herein, the obligations imposed by this instrument upon them shall be joint and several.

g) Successors: The covenants, terms, conditions, and restrictions of this instrument shall be binding upon, and inure to the benefit of, the Parties hereto and their respective personal representatives, heirs, successors, and assigns and shall continue as a servitude running in perpetuity with the Property. The term "Grantor", wherever used herein, and any pronouns used in place thereof, shall include the persons and/or entities named at the beginning of this document, identified as "Grantor" and their personal representatives, heirs, successors, and assigns. The term "Grantee", wherever used herein, and any pronouns used in place thereof, shall include the persons and/or entities named at the beginning of this document, identified as "Grantee" and their personal representatives, heirs, successors, and assigns. The rights of the Grantee and Grantor under this instrument are freely assignable, subject to the notice provisions hereof.

h) Termination of Rights and Obligations: A party's rights and obligations under this instrument terminate upon transfer of the party's interest in the Easement or Property, except that liability for acts or omissions occurring prior to transfer shall survive transfer.

i) Captions: The captions in this instrument have been inserted solely for convenience of reference and are not a part of this instrument and shall have no effect upon construction or interpretation.

j) Counterparts: The Parties may execute this instrument in two or more counterparts, which shall, in the aggregate, be signed by both Parties; each counterpart shall be deemed an original instrument as against any party who has signed it. In the event of any disparity between the counterparts produced, the recorded counterpart shall be controlling.

TO HAVE AND TO HOLD unto the _____ [Grantee]
and its assigns forever.

IN WITNESS WHEREOF, Grantor has caused this Agreement to be
signed in its name.

Executed this _____ day of _____, 20__.

By: _____

Its: _____

STATE OF _____)
) SS
 COUNTY OF _____)

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On this ____ day of _____, 20____, before me, the undersigned, a Notary Public in and for the State of _____, duly commissioned and sworn, personally appeared _____, known to be the _____ of _____, the corporation [person(s)] that executed the foregoing instrument, and acknowledged the said instrument to be the free and voluntary act and deed of said corporation [person(s)], for the uses and purposes therein mentioned, and on oath stated that they are authorized to execute said instrument.

Witness my hand and official seal hereto affixed the day and year written above.

Notary Public in and for the
State of

My Commission Expires: _____

This easement is accepted this _____, day of, 20__.

By: _____
[Grantee]

Attachments: Exhibit A - legal description of the Property

 Exhibit B - list of permitted title encumbrances



SCANNED

Appendix G to Consent Decree

United States v. Carrier Corp. (C.D. Cal.)

SCANNED

1. Northrop Grumman Space & Mission Systems, Corp. (TRW Inc.; Lucas Western, Inc.)
2. Adams-Campbell Co., Ltd. (MBH Investments)
3. Allfast Fastening Systems, Inc.
4. Cacique, Inc.
5. California Hydroforming Co., Inc.
6. California Steel and Tube (MacSteel Service Centers USA; Ferro Union Inc.; Samsteel Inc.)
7. Campbell Soup Co.
8. Joseph Campbell Company
9. Chemtura Corporation (Crompton Corp.; C.K. Witco Corp.)
10. Robert Sager Trust
11. Carmex Railroad LLC
12. GS Investment Properties LLC
13. The Jack C. Ecoff Family Trust (Steven Patrick Ecoff; Ann Ecoff Thurston; Patricia Ecoff Thompson; Mary Ecoff Sawin; Elizabeth Ecoff Ferguson)
14. Hamilton Standard Control (Spectrol Electronics; Bixby Ranch Co.)
15. ITT Industries, Inc.
16. Loctite Corporation (Henkel Corp.; Invitrogen Corp.)
17. Maremont Corp. (Soto Associates; Champion Parts, Inc.; Lois Kipling/Kipling Trust; ArvinMeritor Corp.; C.G.M. Development)
18. Masonite Corp. (Premdor U.S. Holdings, Inc.; International Paper Company)
19. Oakite Products, Inc.
20. Physicians Formula Cosmetics Inc.
21. Rosenberg Real Estate Equity Fund ("RREEF") West VI, Inc.
22. Sigma Plating Company, Inc.
23. Solo Enterprise Corp. (M-Bro Corp.; Mugica Family Trust)
24. Reuland Electric Co.
25. Rathon Corp.
26. Teledyne Technologies Incorporated
27. Valley-Proctor LLC (Futurecraft Corp.)
28. Saint-Gobain Calmar Inc.
29. Acorn Engineering Company (and any Affiliate(s) as that term is defined in Paragraph 3.a. of the Consent Decree entered in United States v. Acorn Engineering Company et al., Civil Action No. 03-5470-ABC (FMOx)(C.D. Cal.)(September 8, 2005))
30. Aerosol Services Company, Inc.
31. Howard Lim
32. Walter Lim

33. Sylvia Lim
34. Nancy Lim
35. GOE Engineering Co., Inc. (and any Affiliate(s) as that term is defined in Paragraph 3.a. of the Consent Decree entered in United States v. Acorn Engineering Company et al., Civil Action No. 03-5470-ABC (FMOx)(C.D. Cal.)(September 8, 2005))
36. Hexcel Corporation (and any Affiliate(s) as that term is defined in Paragraph 3.a. of the Consent Decree entered in United States v. Acorn Engineering Company et al., Civil Action No. 03-5470-ABC (FMOx)(C.D. Cal.)(September 8, 2005))
37. Lansco Die Casting, Inc.
38. C. Roy Herring, Individually and as Trustee of the Miriam Herring Trust
39. Herring Investments, LLC
40. Somitex Prints of California, Inc. (and any Affiliate(s) as that term is defined in Paragraph 3.a. of the Consent Decree entered in United States v. Acorn Engineering Company et al., Civil Action No. 03-5470-ABC (FMOx)(C.D. Cal.)(September 8, 2005))
41. Union Pacific Railroad Company (and any Affiliate(s) as that term is defined in Paragraph 3.a. of the Consent Decree entered in United States v. Acorn Engineering Company et al., Civil Action No. 03-5470-ABC (FMOx)(C.D. Cal.)(September 8, 2005))
42. Utility Trailer Manufacturing Company (and any Affiliate(s) as that term is defined in Paragraph 3.a. of the Consent Decree entered in United States v. Acorn Engineering Company et al., Civil Action No. 03-5470-ABC (FMOx)(C.D. Cal.)(September 8, 2005))
43. Saltire Industrial Inc., f/k/a Scovill, Inc. (and any Affiliate(s) as that term is defined in Paragraph 3.a. of the Consent Decree entered in United States v. Acorn Engineering Company et al., Civil Action No. 03-5470-ABC (FMOx)(C.D. Cal.)(September 8, 2005))
44. Creftcon Industries
45. Environmental Lighting for Architecture, Inc.
46. E.W. Smith Chemical Company
47. Exide Technologies, Inc. (GNB Batteries, Inc.)
48. Great Lakes Chemical Corporation (Successor to Hydrotech Chemical Corp.)
49. Commerce Chemical Company
50. Gray Trust Interests (Larry S. Gray, Sr. Trust UDT 71180 and the Lawrence S. Gray, Jr. Property Trust)
51. Macklanburg-Duncan Company of California, Inc.

52. Pneumo Abex LLC (Successor to Jensen Kelly Corporation)
53. The Ramser Family Trust, Dated September 18, 1989
54. The Philip S. Ramser Family Trust, Dated June 29, 1989
55. Textron, Inc.
56. Trio Metal Stamping, Inc
57. Tropicana Products, Inc.
58. Yort, Inc. (f/k/a Troy Lighting, Inc., Successor to Trakliting, Inc.)
59. JJI Lighting Group, Inc.
60. Eighth & Proctor Investment Co.
61. Chemed Corporation

SCANNED

EXHIBIT H

Appendix H to Consent Decree

United States v. Carrier Corp. (C.D. Cal.)

SCANNED

SCANNED

1. Acorn Engineering Company (and any Affiliate(s) as that term is defined in Paragraph 3.a. of the Consent Decree entered in United States v. Acorn Engineering Company et al., Civil Action No. 03-5470-ABC (FMOx)(C.D. Cal.)(September 8, 2005))
2. Aerosol Services Company, Inc.
3. Howard Lim
4. Walter Lim
5. Sylvia Lim
6. Nancy Lim
7. GOE Engineering Co., Inc. (and any Affiliate(s) as that term is defined in Paragraph 3.a. of the Consent Decree entered in United States v. Acorn Engineering Company et al., Civil Action No. 03-5470-ABC (FMOx)(C.D. Cal.)(September 8, 2005))
8. Hexcel Corporation (and any Affiliate(s) as that term is defined in Paragraph 3.a. of the Consent Decree entered in United States v. Acorn Engineering Company et al., Civil Action No. 03-5470-ABC (FMOx)(C.D. Cal.)(September 8, 2005))
9. Lansco Die Casting, Inc.
10. C. Roy Herring, Individually and as Trustee of the Miriam Herring Trust
11. Herring Investments, LLC
12. Somitex Prints of California, Inc. (and any Affiliate(s) as that term is defined in Paragraph 3.a. of the Consent Decree entered in United States v. Acorn Engineering Company et al., Civil Action No. 03-5470-ABC (FMOx)(C.D. Cal.)(September 8, 2005))
13. Union Pacific Railroad Company (and any Affiliate(s) as that term is defined in Paragraph 3.a. of the Consent Decree entered in United States v. Acorn Engineering Company et al., Civil Action No. 03-5470-ABC (FMOx)(C.D. Cal.)(September 8, 2005))
14. Utility Trailer Manufacturing Company (and any Affiliate(s) as that term is defined in Paragraph 3.a. of the Consent Decree entered in United States v. Acorn Engineering Company et al., Civil Action No. 03-5470-ABC (FMOx)(C.D. Cal.)(September 8, 2005))